



Australian Government

Department of Infrastructure and Transport  
Major Cities Unit

# State of **Australian** Cities 2012







**Australian Government**

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## Abbreviations and acronyms

ABS	Australian Bureau of Statistics
AG	Attorney-General's Department
ACCC	Australian Competition and Consumer Commission
AED	Australian Early Development Index
BITRE	Bureau of Infrastructure, Transport and Regional Economics
BTS	Bureau of Transport Statistics
CBD	Central Business District
CFbD	Child Friendly by Design
COAG	Council of Australian Governments
CRC	Cooperative Research Centre
CRC	Council of Australian Governments Reform Council
CSIRO	Commonwealth Science and Industry Research Organisation
DBCDE	Department of Broadband, Communications and the Digital Economy
DCCEE	Department of Climate Change and Energy Efficiency
DEEWR	Department of Education, Employment and Workplace Relations
DIISRTE	Department of Innovation, Industry, Science and Research
DRALGAS	Department of Regional Australia, Local Government, Arts and Sport
DIT	Department of Infrastructure and Transport
EIU	The Economist Intelligence Unit
ERP	Estimated Residential Population
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
GDP	Gross Domestic Product
GPs	General Practitioners
GST	General Sales Tax
IA	Infrastructure Australia
IFWG	Infrastructure Finance Working Group
LGA	Local government area
LHA	Livable Housing Australia
LHD	Livable Housing Design
NABERS	National Australian Built Environment Rating System
NATSEM	National Centre for Social and Economic Modelling
NB2	Nation Building 2
NBN	National Broadband Network
NHSC	National Housing Supply Council
NPAH	National Partnership Agreement on Homelessness
NTC	National Transport Commission
OECD	Organisation of Economic Cooperation and Development
PCA	Property Council of Australia
PHIDU	Public Health Information Development Unit
pkm	passenger kilometres
PTW	Powered two wheelers
RBA	Reserve Bank of Australia
REIT	Real Estate Investment Trust
SCOTI	COAG Standing Council on Transport and Infrastructure
SEWPac	Department of Sustainability, Environment, Water, Population and Communities
TEUs	Twenty-foot Equivalent Units
UHI	Urban Heat Island
WHO	World Health Organization

# Foreword

The way Australia succeeds in the future will be largely determined by the health of our major cities. They are where three out of every four of us live. They are the economic powerhouses that produce 80 per cent of our national wealth. Our cities are simply too important to ignore.

Last year the Australian Government released the National Urban Policy *Our Cities, Our Future* to guide improvements in the productivity, sustainability and liveability of our major cities. Key to achieving change in our cities is the ability to understand them – how they compare with each other and how they change from year to year. This is the primary purpose of the *State of Australian Cities*.



The report provides an evolving evidence base for the implementation of our National Urban Policy. It looks at progress in key areas such as how well our cities are prepared for climate change, population growth and housing for an ageing population. It looks at how well we are addressing the challenges of urban congestion, improving the design of our buildings and public spaces and greening our cities. It draws together the work of some of the finest researchers and industry experts in the nation. I am enormously grateful for their time and generosity in allowing us to take their findings to a national audience in this way.

*State of Australian Cities 2012* benefits from the fresh data contained in the 2011 Census, shining the brightest possible spotlight on the way Australians live. It is also a valuable reference point to monitor the reforms agreed to by all State and Territory leaders via the Council of Australian Governments to improve the long-term planning in our capital cities.

*State of Australian Cities 2012* is the third report in the series and provides data on all Australian cities with populations above 100,000 people. The first two reports have now been fully downloaded almost two million times – proof of the enormous national and international interest in knowing more about our cities. I am confident that this report will be received with just as much enthusiasm by policy makers, academics and everyday Australians who care about the productivity, sustainability and liveability of our cities.

In this Asian Century, how we plan, invest in and manage our cities will determine how well we survive in the fastest-growing and most dynamic region on earth. Understanding how our cities work is key to that and I am delighted to add to that important collection of knowledge with *State of Australian Cities 2012*.

A stylized, handwritten signature in dark ink, appearing to read 'Anthony Albanese'.

**Anthony Albanese**

Minister for Infrastructure and Transport  
December 2012



# Executive summary

*State of Australian Cities 2012* is the third in a series of annual Australian Government publications bringing together current data to show how our major cities are evolving and to strengthen the knowledge base on which urban policy can be developed. The purpose of *State of Australian Cities 2012* is to inform policy and investment decisions that affect our major cities, to explore trends and to educate the wider community about the factors that are shaping our cities and the lives of those living in them.

This year's report draws on data from the Australian Bureau of Statistics (ABS) 2011 *Census of Population and Housing*. For the 2011 Census, ABS developed new geographical categories, changing the basis for data collection from *collection districts* to *mesh blocks*, which are areas containing between 30 and 60 dwellings. The Statistical Divisions used for capital cities in earlier *State of Australian Cities* reports have been replaced by a new measure: the 'Greater Capital City Statistical Area'. The boundary differences between the old and new geographies are shown in a series of maps in Appendix 1 of this report.

Where possible, *State of Australian Cities 2012* uses long-term time series to contextualise current data, showing how our cities are shaped over time. This year's report also contains more feature articles in order to better illustrate particular policy issues. The report concludes with a discussion of governance in Australia's major cities. For the first time it includes an evaluation of progress in implementing the National Urban Policy.

## Key findings Chapter 2: Population and Settlement

- By 2025, it is expected that 750 cities of over half a million people and 360 cities over one million in size will exist in the greater Asian region.
- Melbourne and Sydney between them have absorbed nearly 40 per cent of the Australian population growth since 2001.
- The proportion of the population living in the capital cities of most states and territories between has increased steadily over the last 40 years.
- The population of major cities continues to age, with declines across the board in the proportion of the population under 25. There has been a small increase in the working age population and a large increase in those 65 and over.
- The gap between population increase and housing supply is now the largest and most sustained in a century.
- In response, housing occupancy rates which had been falling steadily for nearly a century, began to plateau in the mid-2000s and have begun to rise slightly in recent years. Most of the increase has occurred in households consisting of families with children.



- Since 1996, house prices in Australia have increased faster and for the longest period since at least 1880.
- In 1996, 60 per cent of house owners owned their house outright compared to 46 per cent in 2011.
- A decline in the number of housing lots produced per capita is occurring across the capitals but is particularly severe in Sydney. Block size has fallen and the price per square metre has risen sharply.
- New houses in Australia are possibly the largest in the world, eclipsing the United States. However, there has been little or no growth for a decade and unit sizes have fallen.
- Relative housing construction costs have risen slowly for 40 years.
- Since 1986, there has been a rise in the premium for living near the CBD of cities. In Sydney and Melbourne, a dwelling 50 kilometres from the city centre has doubled in value in real terms since then, while one close to the CBD has increased more than five-fold.
- While there has been a net growth in government-provided dwelling stock since 2006, it has fallen as a proportion of total stock across all major cities, apart from Cairns and Toowoomba.
- Real rental income per dwelling has increased virtually without interruption since rental controls were lifted in 1949.
- Rental vacancy rates remain very low across all capitals but are particularly severe in Perth, Darwin and Canberra.

## Key findings Chapter 3: Productivity

- Australian national productivity growth levels continue to be lower than previous years.
- Most of the industry sectors that are experiencing rapid growth as a proportion of the economy are located in city centres and rely on increasing job densities to drive their productivity.
- This suggests that, measured in terms of the value of economic activity, cities may be beginning to shrink in on themselves, reversing the dispersing forces that have been dominant since the end of World War II.
- After reaching a peak in 2005, per capita urban passenger transport (the number of kilometres travelled per person) has declined more steeply and for a longer period than since the Great Depression.
- The decline has been led by a reduction in car travel offset by some increase in heavy rail.
- In contrast, the per capita freight task is increasing substantially and is likely to become the major driver of the urban transport systems.
- Morning travel peak has increased and sharpened in the last 30 years, greatly increasing the pressure on transport networks. This appears to be driven in part by an increase in discretionary travel in the morning peak period.
- Fare recovery in Australian urban mass transit systems is already well below international best practice and continues to decline. This raises questions about the sustainability of their current financial structures and the scope for further investment in mass transport infrastructure and services.

- The sea ports of coastal major cities, particularly Sydney and Melbourne, are experiencing a significant increase in container volumes. More than 80 per cent of containers will be discharged and loaded within the urban boundary.
- There are significant differences in labour force participation between major cities. In Canberra 72 per cent of the working age population is in the workforce while in Wollongong 57 per cent is in the workforce.
- Female participation in the paid workforce has increased by nearly 10 per cent since 1988. The increase is across the age cohorts.
- Female human capital is increasing at a faster rate than that of males, indicating that not only are there more women in the workforce but their potential individual productivity is increasing.
- Australia is following the trends of other advanced economies in that a growing proportion of older people are working past the traditional retirement age.

## Key findings Chapter 4: Sustainability

- Australia's major cities since 1952 have experienced increases in average maximum temperatures of up to 2°C.
- Most Australian cities, except for those located in the far north, have experienced declines in annual rainfall over the last 60 years.
- The management of sea level rise impacts in our coastal major cities at state/territory and local government levels is progressing to varying extents.
- Increasing prevalence and severity of natural perils have natural regional differences, giving rise to varying costs and losses – for example, Sydney has a historically very high prevalence of hailstorm damage.
- The number of very high and extreme fire weather days is estimated to increase by between 15 and 60 per cent by 2020 and double to quadruple by 2050.
- 65 per cent of Australian superannuation investment fund managers have not recognised the impacts climate change will have on investment portfolios. Similarly, 83 per cent of superfunds replied in a key survey, 'no' to the question 'do you believe that systemic risks like climate change are currently being priced into asset valuations properly'.
- It is estimated that about 490,000 or six per cent of addresses in capital cities are within 100 metres of substantial bushland. Over 750,000 are within 200 metres, posing substantial risks of property loss from bushfire.
- The fresh food production on the fringes of our cities plays a key role in providing staple perishable vegetables. These areas are under threat from the outward expansion and economic pressures of our cities.
- Our cities continue to place high biodiversity pressures on urban waterways and estuarine environments, many of which contain sites of international heritage significance.
- Proper management of natural systems and 'green infrastructure' can make major contributions to the sustainability and liveability of our cities.
- Total open space in and around our cities can amount to 60 per cent of the urban area.

- Local, state and territory governments are moving to better manage natural and urban systems and are addressing challenges such as urban heat islands, cleaning waterways and more sustainable buildings.

## Key findings Chapter 5: Liveability

- Australia ranks in the top five countries across almost all of the dimensions of the OECD Better Life Index except for work–life balance, because 14 per cent of employees work very long hours, much higher than the OECD average of nine per cent. When all topics are weighted equally, Australia ranks as one of the top three countries in the world for overall quality of life.
- Australia is ranked ninth on the United Nations World Happiness Index.
- Melbourne has been ranked first on the 2012 EIU Global Cities Liveability Index for the second year in a row. Sydney was ranked sixth, Perth eighth and Adelaide ninth.
- The 2011 Mercer Quality of Living Index shows a slight but continued decline in ranking for Sydney and Brisbane since 2009, from 10th to 11th for Sydney and from 34th to 37th for Brisbane. Meanwhile Melbourne, Perth and Adelaide maintained their relative positions of 18th, 21st and 30th respectively. For the first time Canberra has been included in the Mercer Quality of Living survey and was ranked above Adelaide and Brisbane, at 26th position in 2011.
- A greater proportion of residents in Australian cities ranked their city as highly liveable in 2011 in the My City Survey than was the case in 2010. Adelaide has retained its place as the most highly ranked city by its residents for overall liveability.
- There has been an increase in the proportion of families with children living in higher density residential dwellings. In Sydney in 2011, 43 per cent of people living in flats, units or apartments were part of families with children. A quarter of those households were one-parent families.

*Launceston.*

Image courtesy of John Hardman



- The proportion of the population that is Aboriginal or Torres Strait Islander is largest in Darwin (9.2 per cent) and smallest in Melbourne (0.5 per cent). However, Sydney's Indigenous population (54,747 people) is the largest in the country. Although proportionally the smallest, Melbourne's Indigenous population (18,206) is almost double that of Darwin (11,100).
- While Australian cities may be expensive for international visitors, the cost of living for Australian residents of Australia's capital cities has been relatively stable for over two decades. Sydney is the most expensive city with the highest average costs for electricity, mortgage interest, transport and recreational activities.
- Early life is an important social determinant of health. Results from the 2009 Australian Early Development Index (AEDI) shows that a smaller proportion of children are 'developmentally vulnerable' in metropolitan areas than in country Australia, except in Queensland.
- Of the capital cities, Hobart has the highest proportion of people who walk to work whilst Perth has the lowest. Darwin has the highest proportion of people who cycle to work whilst Sydney has the lowest.

## Key findings Chapter 6: Governance

- Implementation of the National Urban Policy is well underway as summarised in Appendix B.
- The Council of Australian Governments (COAG) Reform Council provided COAG with its *Review of capital city strategic planning systems* in December 2011 and the report was publicly released in April 2012. It found that while jurisdictions made considerable efforts to improve their strategic planning systems, no jurisdiction was found to be wholly consistent with the nine nationally agreed criteria. It highlighted the need for ongoing targeted and agreed intergovernmental co-operation on cities issues to help all levels of government get in place effective strategic planning systems.
- In its response to the report, COAG agreed to continued intergovernmental collaboration and that further work on cities would be taken forward by the COAG Standing Council on Transport and Infrastructure (SCOTI).
- The 2012–2013 Federal Budget included a framework for the second phase of the Nation Building Program (NB2) which will run from 2014–2019 and help deliver on the goals and objectives of the National Urban Policy.
- An Infrastructure Finance and Funding Reform report, prepared by the Infrastructure and Finance Working Group, was released in June 2012. It stressed the importance of improved planning, a deeper pipeline of projects and funding reform.
- In June 2012 the Productivity Commission released the first national study of the regulatory role of local government. Its key message is that implementing and enforcing state laws, rather than local laws, is dominating local governments' regulatory workload.







# Introduction

## Chapter 1

The annual *State of Australian Cities* report fulfils a commitment by the Australian Government to publish an annual report on the progress of Australian cities towards the national aspirations described in *Our Cities, Our Future – a national urban policy for a productive, sustainable and liveable future* (Department of Infrastructure and Transport 2011). The Australian Government's *State of Australian Cities 2010* report was the first comprehensive snapshot of Australian cities, bringing together existing data and research to inform development of a national urban policy. The *State of Australian Cities 2012* report is the third in the series.

### What's new in 2012?

The previous *State of Australian Cities* reports drew heavily from the Australian Bureau of Statistics (ABS) *2006 Census of Population and Housing* (the Census).

In 2012, the ABS released the data from the 2011 Census in two tranches. The first tranche was released in July and contained the Basic Community Profile which focuses on population profiles and housing. This data forms the basis of much of the *State of Australian Cities 2012* report. The second tranche was released in October and contained data on skills, migration and industry structure. This tranche was released too late for it to be comprehensively incorporated into this report and while a small component of the travel to work data is incorporated in Chapter 5, Liveability, more detailed discussions of human capital, changing industry structure and the movement of Australians will have to await analysis in future reports.

Feedback from the 2011 report indicated that readers would like to see more feature articles and in this year's report these are used more extensively to highlight particular policy-relevant issues. This year's report also commences the monitoring of progress of the implementation of the National Urban Policy. Chapter 6 on Governance, provides this reporting.

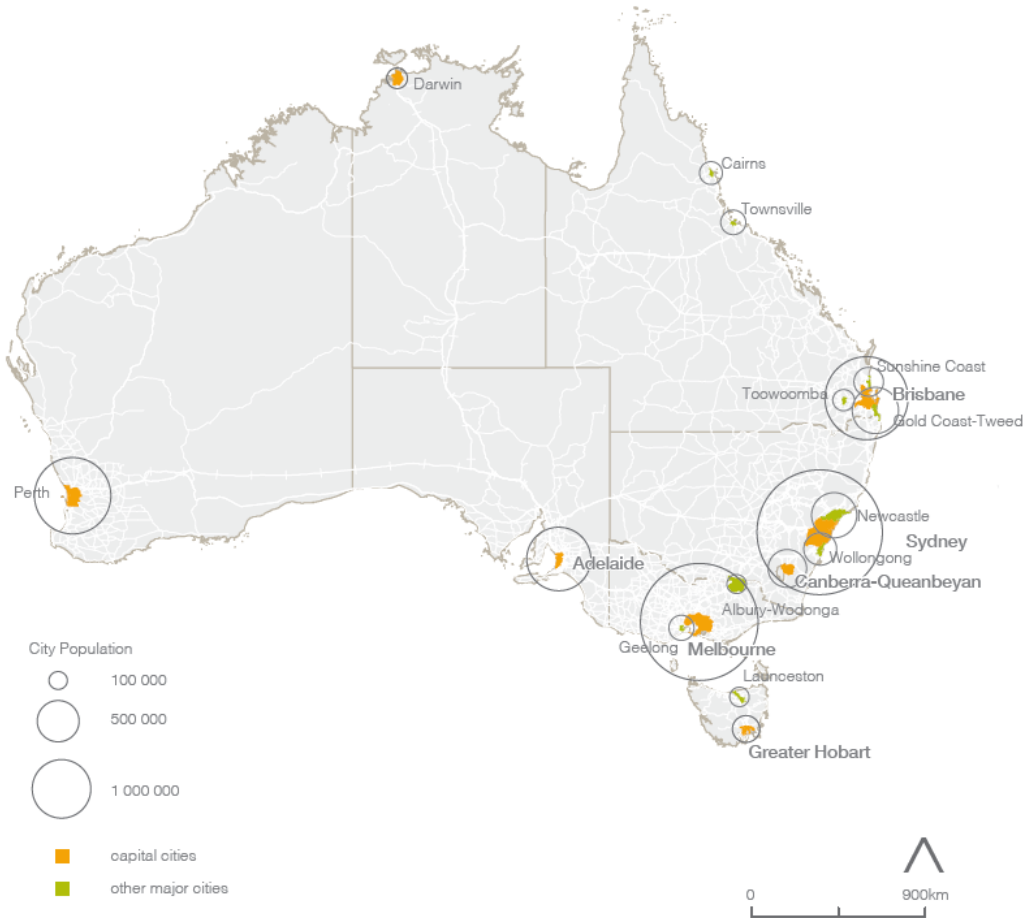
Because changes in cities can take years to crystallise, some of the reporting in this edition looks back more than a century, giving greater context to the current data.

### Structure of the 2012 report

This report follows the model of the previous reports and reflects the structure of the National Urban Policy. Chapter 2 details changes in urban population and settlement. Indicators relating to the policy's three primary dimensions – productivity, sustainability and liveability – are discussed in Chapters 3, 4 and 5. The report concludes with a discussion of governance in Chapter 6.

# Defining our major cities

Figure 1-1 Major cities of Australia



The State of Australian Cities reports define major cities as those with a population of more than 100,000 residents. This follows the ABS definition (2011) and the convention in urban studies literature (Forster and Hamnett 2007). Applying this definition, there are 18 major cities in Australia (Figure 1-1). In 2011, 77.3 per cent of the population lived in these cities, up from 75.9 per cent in 2001.

## Other Australian cities

**Table 1-1** Cities with total population between 30,000 and 100,000 and growth rates 2001–2011 (Statistical District)

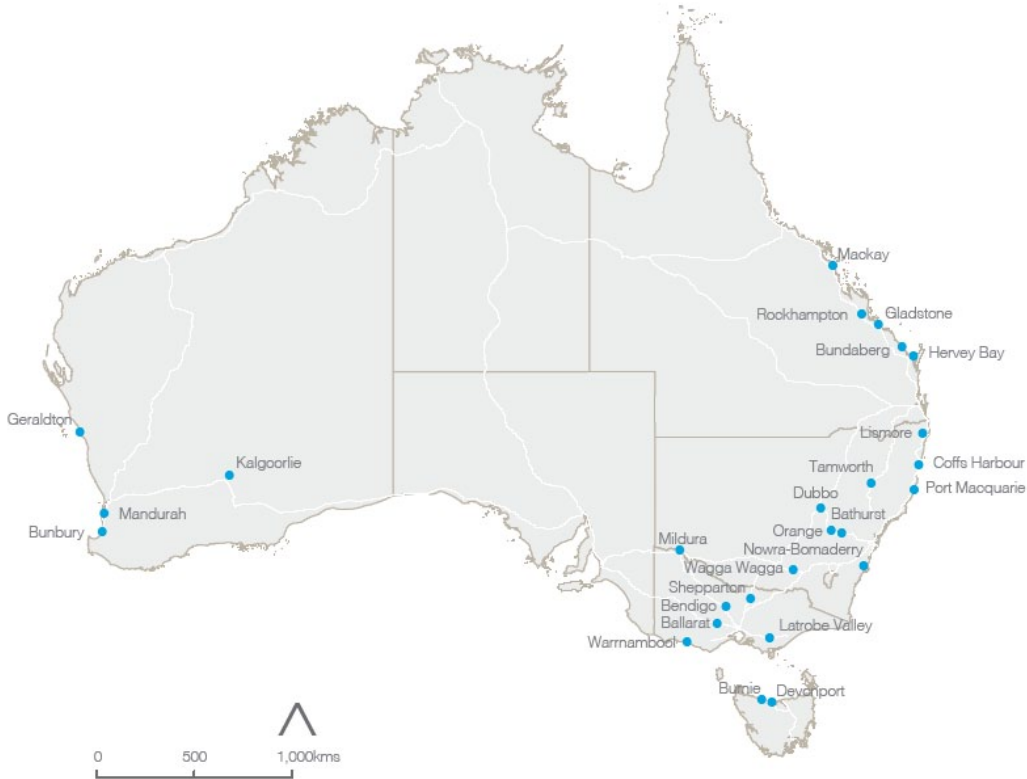
City	2001	2011	Average annual growth (%)
Ballarat (VIC)	83,599	95,007	1.3
Bendigo (VIC)	79,673	89,666	1.2
Mandurah (WA)*	59,752	88,305	4.0
Burnie-Devonport (TAS)	77,480	84,217	0.8
Mackay (QLD)	64,767	83,350	2.6
Latrobe Valley (VIC)	74,996	78,614	0.5
Rockhampton (QLD)	67,369	75,648	1.2
Bunbury (WA)	50,008	67,090	3.0
Bundaberg (QLD)	56,806	65,728	1.5
Hervey Bay (QLD)	39,599	58,261	3.9
Wagga Wagga (NSW)	52,120	56,540	0.8
Coffs Harbour (NSW)	46,099	52,014	1.2
Gladstone (QLD)	39,100	50,507	2.6
Shepparton (VIC)	44,876	48,958	0.9
Mildura (VIC)	45,294	48,382	0.7
Tamworth (NSW)	42,510	46,751	1.0
Port Macquarie (NSW)	38,130	43,791	1.4
Orange (NSW)	36,999	39,480	0.7
Dubbo (NSW)	35,191	36,920	0.5
Geraldton (WA)	31,425	36,138	1.4
Nowra-Bomaderry (NSW)	30,168	34,444	1.3
Bathurst (NSW)	30,615	34,373	1.2
Warrnambool (VIC)	29,629	32,592	1.0
Kalgoorlie/Boulder (WA)	29,383	31,880	0.8
Lismore (NSW)	30,871	31,607	0.2

Note: \*Mandurah now classified as part of Perth (2011 Census)

Source: ABS 2012

A total of 6.3 per cent of Australians live in cities with populations between 30,000 and 100,000 (Table 1-1). Only five out of the 25 cities are growing faster than the national average of around 1.5 per cent.

Figure 1-2 Cities in Australia with populations between 30,000 and 100,000



One of the most striking features of Australian cities with populations of fewer than 100,000 is their social and economic diversity. They range from the industrial cities of Burnie-Devonport, Ballarat and Bendigo to sea-change cities and others that service extensive agricultural hinterlands and mining activities. Their smaller size does not lessen their role as critical regional connectors or economic switchyards in the wider economy.

## Geographical boundaries

The State of Australian Cities reports use ABS boundaries that most closely relate to the built urban areas to enable national comparisons.

The 2011 Census marked the first major change to the ABS geography for nearly 50 years. Previously, ABS units were based on Collection Districts which were the areas that a Census collector could cover when distributing and collecting Census forms (about 200 households). These were then built up into Statistical Local Areas and Local Government Areas. One of the main problems with this system was that every time Local Government Areas changed, the ABS geography changed. Since this happened most years, constructing a data time series was difficult and progressively more inaccurate.

To address this problem, a new geographic unit called a ‘mesh block’ was adopted for the 2011 Census. In an urban context, mesh blocks are areas that contain between 30 and 60 dwellings. Mesh blocks have two main advantages:

1. They function like small Lego bricks and can be built up into a variety of geographies according to requirements. In other words, users of Census data are no longer restricted to local government boundaries.
2. The area of mesh blocks will remain stable through time which means that those wishing to construct a time series will not have to deal with continual changes in geographic areas and long and accurate time series will eventually be possible.

As part of the changeover, much of the Census geography used in the previous State of Australian Cities reports is no longer ‘technically supported’ by the ABS. The Statistical Divisions used for capital cities in earlier reports have been replaced by a unit called the ‘Greater Capital City Statistical Area’. The differences between the old and new geographies are shown in a series of maps in Appendix A of this report and are briefly outlined here:

- *Sydney*. Little has changed apart from some extension in the Blue Mountains.
- *Melbourne*. The boundary of Melbourne has been greatly extended northwards and now takes in Macedon, Lancefield and the Murrindindi shire.
- *Brisbane*. This city has the largest boundary changes of all and nearly doubles in area. The new areas are mainly to the west and include the rapidly suburbanising Beaudesert, the former dairying areas of Boonah and the Eastern Downs around Esk, stretching nearly as far north as Nanango.
- *Adelaide*. This city has two pieces added to it. The northern boundary is extended to take in the former agricultural areas of Roseworthy and Two Wells while, to the east, Adelaide now takes in Hahndorf and Mt Barker and extends out as far as Mt Torrens.
- *Perth*. Much of the former Peel area has been added to Perth, which now includes Mandurah and Pinjarra.
- *Hobart*. There are only small boundary changes to this city – it moves a little further to the east to take in the fishing village of Dunalloy.
- *Canberra*. The boundary now takes in the whole of the ACT but the effect on its population is minimal.
- *Darwin*. Unchanged.

The ABS has published a limited number of time series based on the new capital city geographies and these are used in this report where possible.

In previous reports, an ABS unit called a ‘Statistical District’ was used to define the non-capital major cities. This is also a non-supported geography for the 2011 Census, but fortunately it was possible to manually reconstruct these using Statistical Local Areas. This means that it was also possible to construct a time series back to 1996 for the non-capitals.

Inevitably, with such a major change, there has been a period of adjustment and this report does contain some data on the old boundaries, particularly in the longer time series.

## Residence

In the 2006 Census, the ABS introduced a major change that affects the time series used in this report. All previous Censuses were based on place of enumeration i.e. a person was counted where they were on Census night. In order to improve the accuracy of the Census, 2006 and 2011 data was also based on place of usual residence. In most cases, the difference between the two methods is slight – often a fraction of a per cent – but it presents a dilemma to those constructing a time series. The choice is between continuing to use the less accurate place of enumeration data or changing to place of usual residence and having a very slight discrepancy between the pre and post-2001 Census data. The approach taken in this report is to use place of enumeration data pre-2001 and place of usual residence post-2001 as a default because the value of long time series insights outweighs a slight loss in short-term accuracy. The exception is where the time series involves very small changes over the years such as housing occupancy rates. In these cases, only place of usual residence data is used (2006 and 2011 Censuses).

## Cities within cities

Within the area of the largest capital cities there are a number centres that have populations in excess of 100,000 people. Some, like Parramatta in Sydney, also have densely developed central business districts and provide a wide range of commercial and employment opportunities, services and cultural and recreational facilities. These centres are not separately identified as major cities because much of their economic infrastructure, such as transport, energy and water, is shared with the wider metropolitan region.

## Chapter 1 References

Australian Bureau of Statistics (ABS) 2011, *Australian Standard Geographical Classification (ASGC)*, cat. no. 1216.0, Canberra.

ABS 2012, *Regional Population Growth, Australia 2011*, cat. no. 3218.0, Canberra.

Department of Infrastructure and Transport 2011, *Our Cities, Our Future – a national urban policy for a more productive, sustainable and liveable future*, Commonwealth of Australia, Canberra.

Forster, C and Hamnett, S 2008, The State of Australian Cities, *Built Environment* 34(3): 247–254.

# Population and settlement

## Chapter 2

This chapter is divided into two distinct parts. The 'Population' section uses the newly available 2011 Census data to provide a count of the population growth in Australia's major cities. It then looks at the age structure of cities to show the recent changes that indicate what may happen in future. This discussion informs Chapter 3 on Productivity, which uses the 'Three P' framework: Population, Productivity and Participation.

The second part of the chapter, 'Settlement', concentrates on housing, again drawing heavily on data from the 2011 Census augmented by surveys and private sector data. This section explores the relationship between population growth and housing supply.

### Summary indicators

Dimension	Indicators
International urbanisation	World levels of urbanisation and major cities 1980 and projected for 2025
National population growth	Components of Australia's population growth 1982–2011
Major city population change	Population increase 2001–11 Population growth in major cities 2001–11 Major city and emerging city growth rates 2001–11 Proportion of population living in capitals and non-capitals 1911–2011
Capital city primacy	Growth 1971–2011
Age structure	Percentage change by age and major city 1996–2011
Dwelling stock growth	Major city average annual percentage increase 2006–11
Dwelling composition	Proportion of attached dwelling approvals 1985–2011 Proportion of houses and attached dwellings 1996–2011
Occupancy rates	National growth in adult population and dwelling stock 1860–2011 National average occupancy rate 1860–2012 Household composition 1996–2011 Sydney population and dwelling approvals 1985–2011 Sydney's dwelling requirement and occupancy rate 1997–2010 Additional persons per additional dwelling 2006–11 Major city occupancy rates 2006–11
House prices	Sydney and Melbourne house prices 1880–2012
Housing finance	Commitments 1985–2012 Proportion of mortgaged dwellings 1996–2011

*Continued*



Dimension	Indicators
House sizes and construction	Average size of new Australian dwellings 1984–2011 Real house prices and construction costs 1960–2011
Land supply	Capital city housing lot production 2001–11 Capital city median lot size 2001–11 Capital city housing lot median dollars per square metre 2001–11 Real house prices by distance from CBD, various years to 2009–10
Government housing	Percentage change in social housing stock 2006–11 Government housing as a proportion of total dwelling stock 2006–11
Rent	Real gross rental income per dwelling 1880–2011 Capital city vacancy rates 2005–11 Percentage of occupied dwellings rented 1996–2011 Distribution of weekly rent 1996–2011

## Key findings

- By 2025, it is expected that 750 cities of over half a million people and 360 cities over one million in size will exist in the greater Asian region.
- Melbourne and Sydney between them have absorbed nearly 40 per cent of the population growth since 2001.
- There was a sharp increase in the proportion of the population living in the capital cities of most states and territories between 2001 and 2011.
- The population of major cities continues to age, with declines across the board in the proportion of the population under 25. There has been a small increase in the working age population and a large increase in those 65 and over.
- The gap between population increase and housing supply is now the largest and most sustained in a century.
- In response, housing occupancy rates, which had been falling steadily for nearly a century, began to plateau in the mid-2000s and have begun to rise slightly in recent years. Most of the increase has occurred in households consisting of families with children.
- Since 1996, house prices in Australia have increased faster and for the longest period since at least 1880.
- In 1996, 60 per cent of house owners owned their house outright, compared to 46 per cent in 2011.
- A decline in the number of housing lots produced per capita is occurring across the capitals but is particularly severe in Sydney. Block size has fallen and the price per square metre has risen sharply.
- New houses in Australia are possibly the largest in the world, eclipsing the United States. However, there has been little or no growth for a decade and unit sizes have fallen.
- There has been little change in relative housing construction costs for 40 years.
- Since 1986, there has been a rise in the premium for living near the CBD of cities. In Sydney and Melbourne, a dwelling 50 kilometres from the city centre has doubled in value in real terms since then, while one close to the CBD has increased more than five-fold.



- While there has been a net growth in government-provided dwelling stock since 2006, it has fallen as a proportion of total stock across all major cities, apart from Cairns and Toowoomba
- Real rental income per dwelling has increased virtually without interruption since the major rental controls were lifted in 1949.
- Rental vacancy rates remain very low across all capitals but are particularly severe in Perth, Darwin and Canberra.

## Population

### Introduction

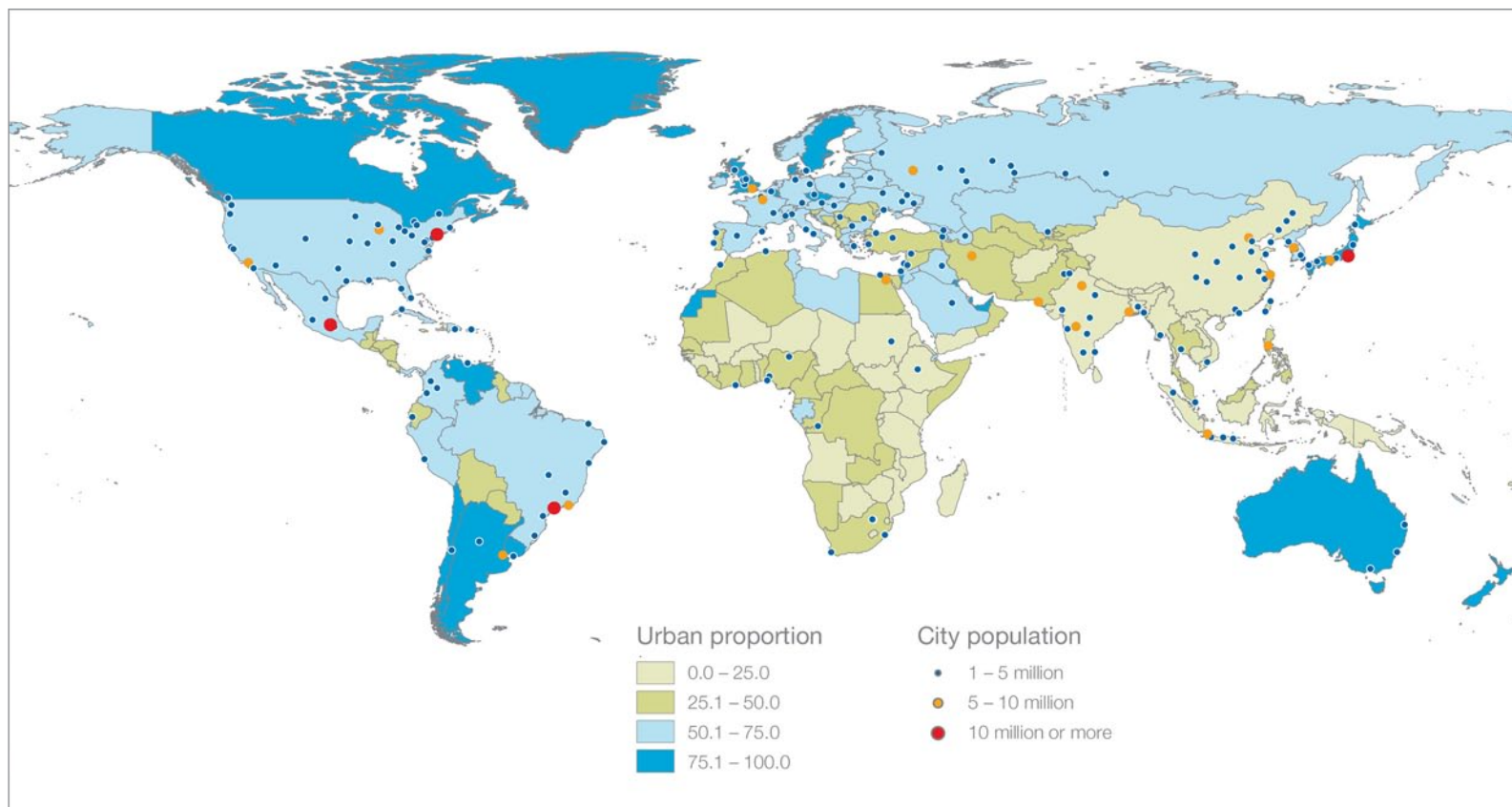
When discussing the population of Australia, it is important to understand the way it is calculated by the ABS. Every five years since 1911, a count of Australia's population, called the 'Census of Population and Housing', has been conducted. Obtaining the most accurate count possible is important both for the administration of government and to ensure equal parliamentary representation. The ABS therefore conducts a Post Enumeration Survey to improve the accuracy of the count by, for example, improving the estimate of how many Australians were overseas on Census night. It then adjusts the Census count accordingly to develop the Estimated Residential Population (ERP) data set. The difference between the Census count and the ERP can be substantial. In Sydney in 2011, for example, there was a difference of 214,318 persons between the Census snapshot and the Post Enumeration Survey.

In the five years between each Census, the ERP is adjusted by the ABS using a variety of data sources to develop the projected ERP for each year. At the next Census, the ERP for that year is reset using Census data and the Post Enumeration Survey and the estimates for the previous years are adjusted accordingly. Although the ABS uses a variety of data sources and sophisticated analyses to calculate the ERP, it is always an estimate. The difference between the projected national ERP in 2011 and the one based on the Post Enumeration Survey was nearly 300,000 people. The population figures used in this section are the ERP based on the 2011 Post Enumeration Survey.

In 1980, much of Asia and Africa had relatively low levels of urbanisation, with the Americas, Europe, Australia and New Zealand being assessed by the United Nations as more highly urbanised. The world at that time had four mega cities of more than 10 million people: New York, Mexico City and São Paulo in the Americas and Tokyo in Asia (Figure 2-1). Since 1980, countries that were once considered to be 'developing' have become increasingly urbanised (Figure 2-1). Many cities across greater Asia and Africa in particular have been growing at more than five per cent a year and the UN projects their growth rates will continue at three to five per cent (United Nations 2012). In 2012, there are approximately 280 cities of over one million people in size within our business time zone (70° to 170°). Thirty-eight of these cities are the size of or larger than Sydney and Melbourne. Australia, once a standout as a highly industrialised and urbanised country in the region, is now being joined by many other countries. By 2025, it is expected that 750 cities of over half a million people and 360 cities over one million in size will exist in the greater Asian region (Figure 2-2) (United Nations 2012).

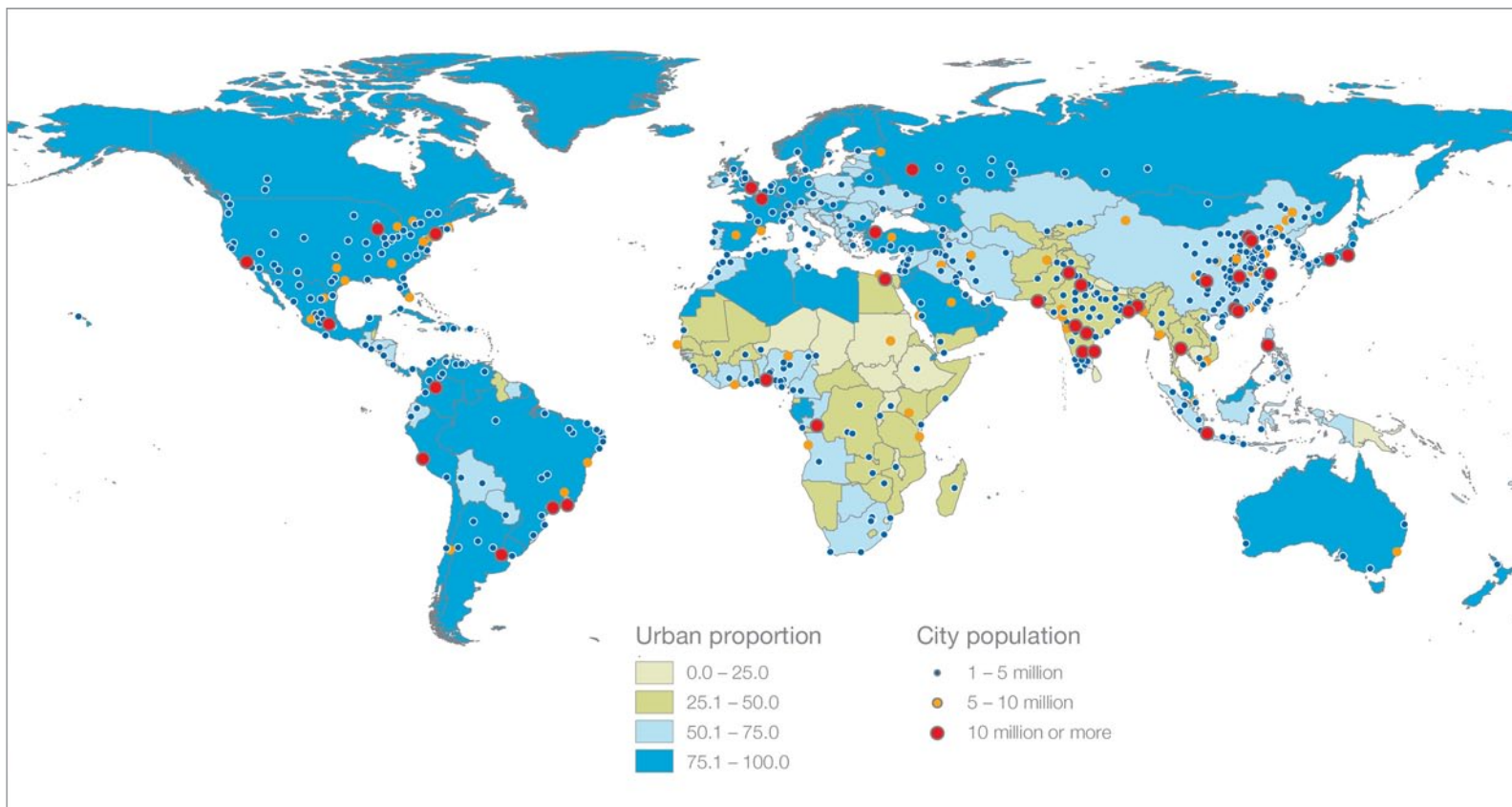
## International urbanisation

Figure 2-1 World levels of urbanisation and major cities for 1980



Source: United Nations 2012

Figure 2-2 World levels of urbanisation and major cities projected for 2025



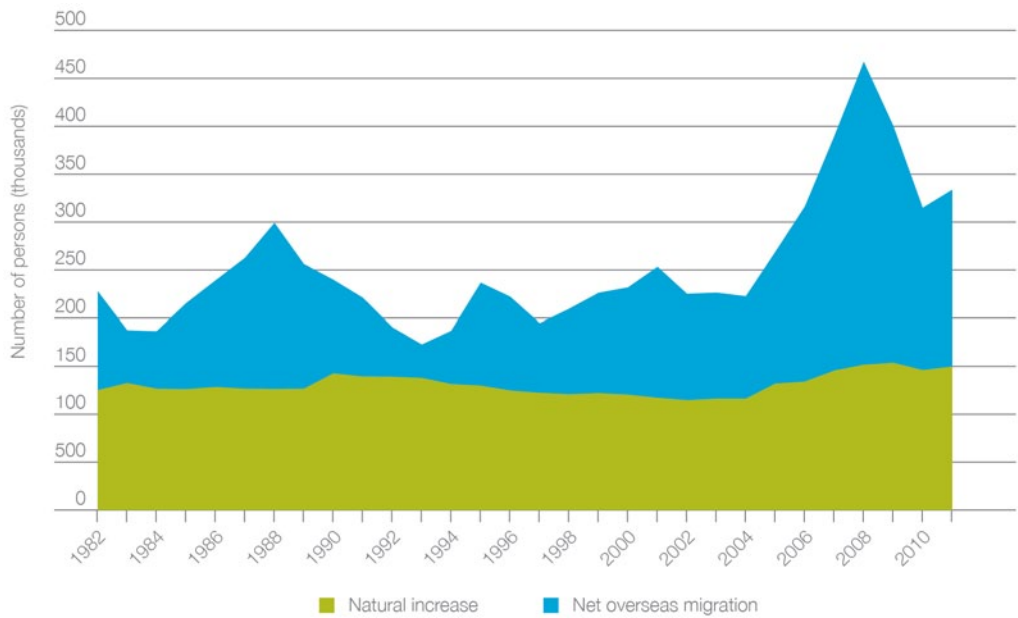
Note: UN predicts Melbourne to be less than five million in 2025. The ABS Series B (medium) projects that Melbourne will have a population over five million in 2026.

Source: United Nations 2012

The implications of growth and urbanisation across Asia in the future are significant for Australia as the world population centre of gravity shifts towards our region. This year the Australian Government released the *Australia in the Asian Century White Paper* (2012). The report states that large cities have 38 per cent of the world’s population and generate 72 per cent of global output. Increasing urbanisation across Asia is predicted to drive strong demand for Australia’s energy and mineral resources (Commonwealth of Australia 2012, p. 66). This also presents considerable opportunities in the services sector.

## National population growth

Figure 2-3      Components of Australia’s population growth 1982–2011



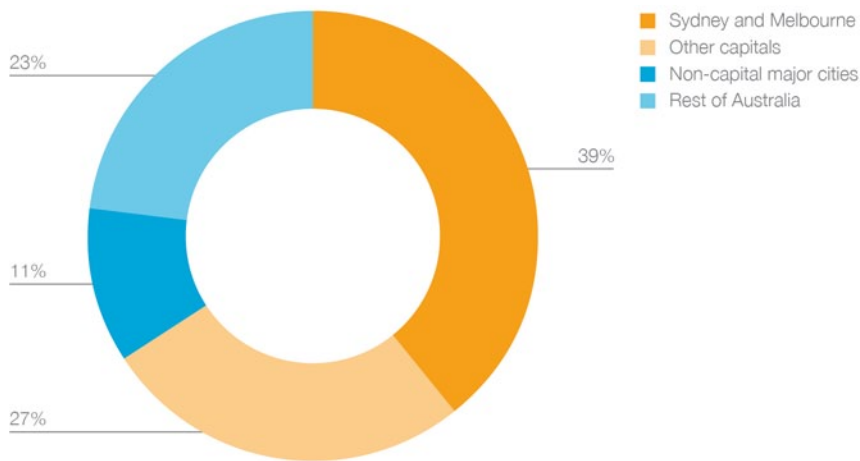
Source: ABS 2012c

The population of Australia in 2011 was 22,485,300 (ABS 2012c). This represents an increase of 2.95 million people or approximately 15 per cent between June 2001 and June 2011.

Figure 2-3 shows that following a gradual decline between 1980 and 2004 there has been a growth in natural increase in Australia. Net overseas migration increased again in 2011 after a steep decline from 2007 to 2010. However, it is important to note that 58.8 per cent of these migrants were temporary. These included international students, temporary skilled (457 visa) workers, working holidaymakers and tourists. A total of 39.5 per cent of migrants arrived under permanent migration and humanitarian programs (DIAC 2012).

## Major city population change

Figure 2-4      Population increase 2001–11



Source: ABS 2012d

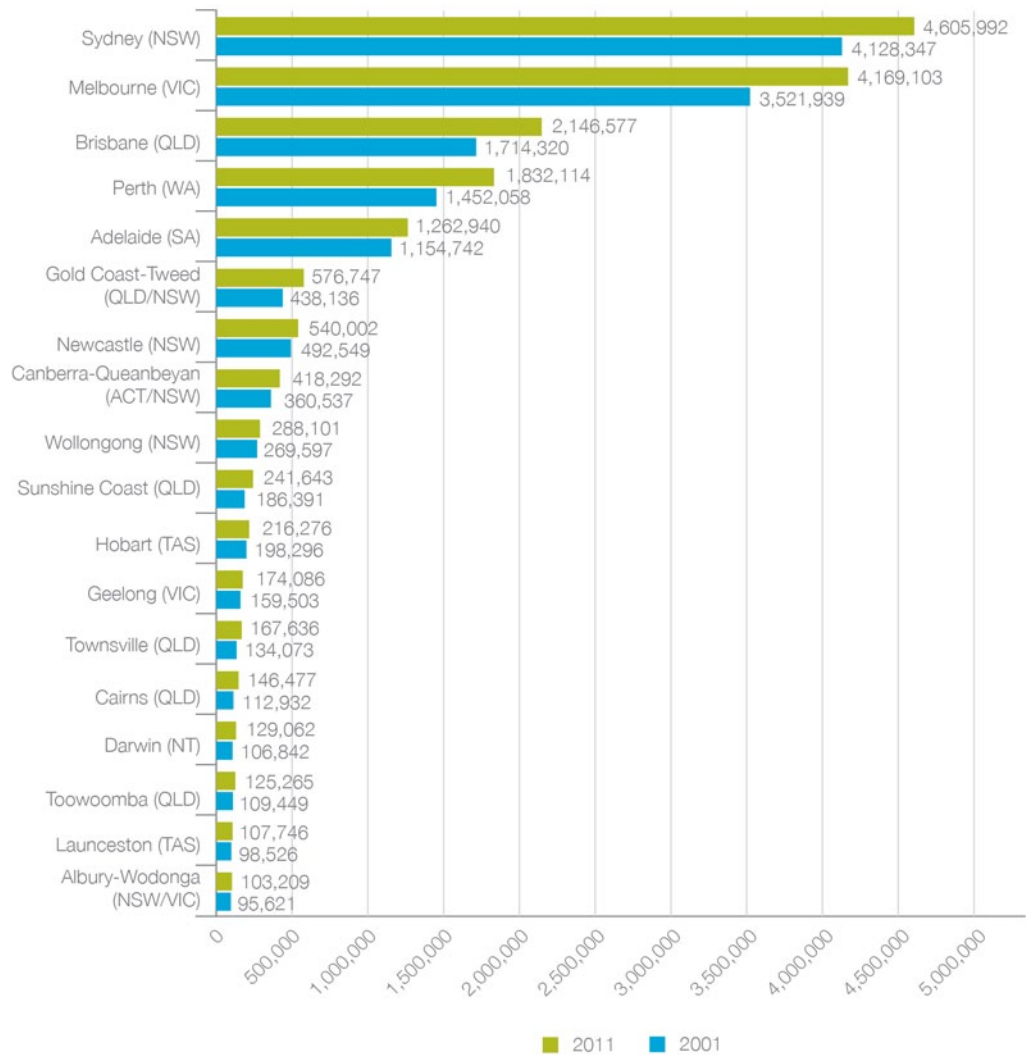
Figure 2-4 shows that Sydney and Melbourne accommodated nearly 40 per cent of Australia’s additional population between 2001 and 2011, while the other 16 major cities combined received nearly the same amount of people.

*Aerial view of Darwin.*

Image courtesy of Nicholas Parker



Figure 2-5 Population growth in major cities 2001–11

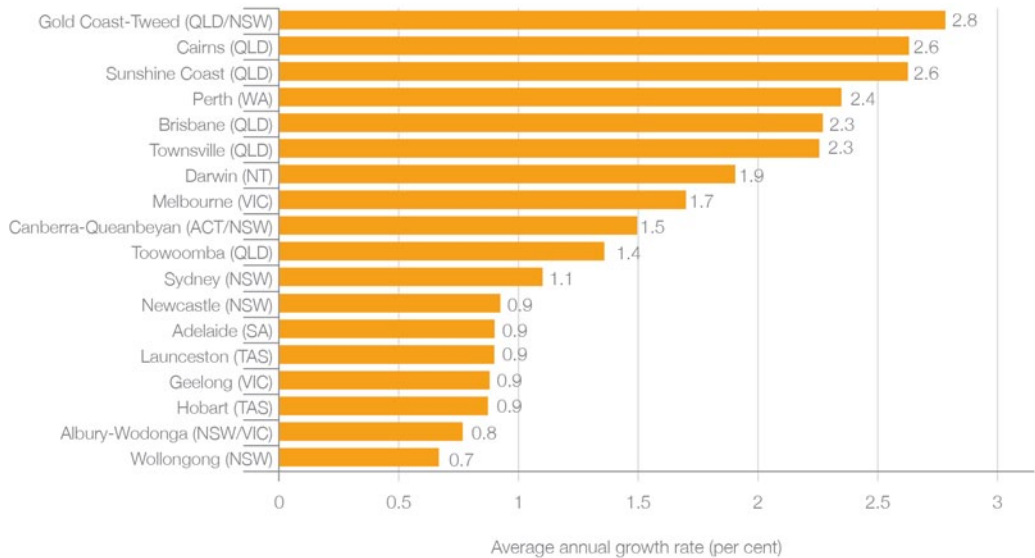


Source: ABS 2012d

Over the course of the 20th century, many cities have experienced declines in population numbers at some time – for example, Adelaide and Melbourne in the Great Depression and Darwin after Cyclone Tracy (ABS 2008). Figure 2-5 shows that all Australia’s major cities have grown over the last decade.



Figure 2-6      Population growth in major cities 2001–11



Source: ABS 2012d

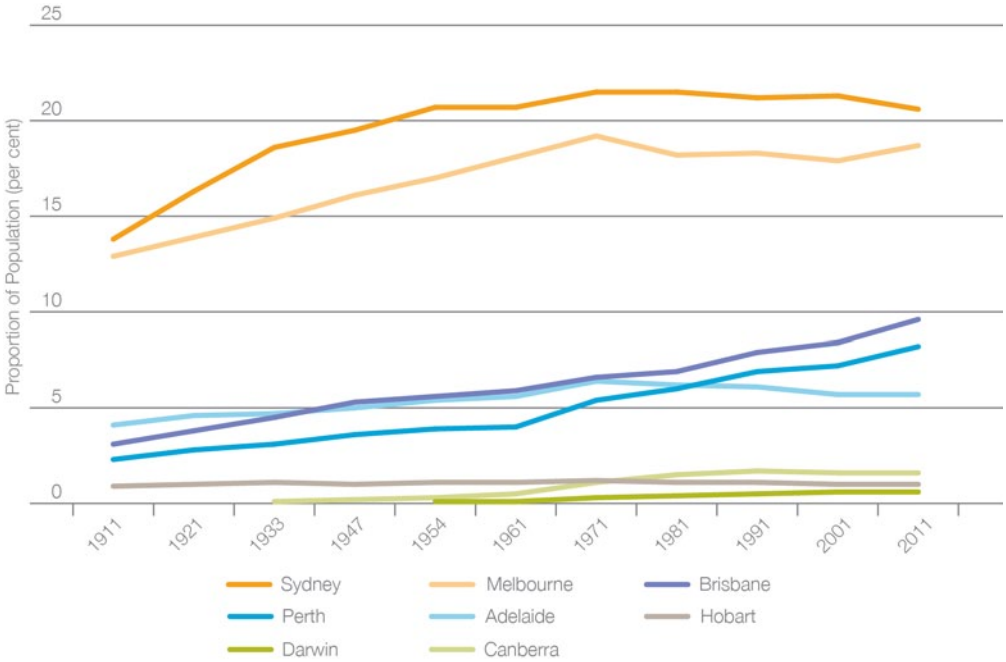
Figure 2-6 illustrates that the average annual rate of population growth has generally been higher in Australia’s northern cities, and Perth in the west. Melbourne is the only city in the south-east growing above the national average of around 1.5 per cent. It should be noted however that the growth rates of Cairns and the Gold Coast have begun to moderate in recent years.

*Empire Theatre, Toowoomba.*

Image courtesy of Toowoomba City Council



Figure 2-7 Proportion of Australia’s population living in capitals 1911–2011



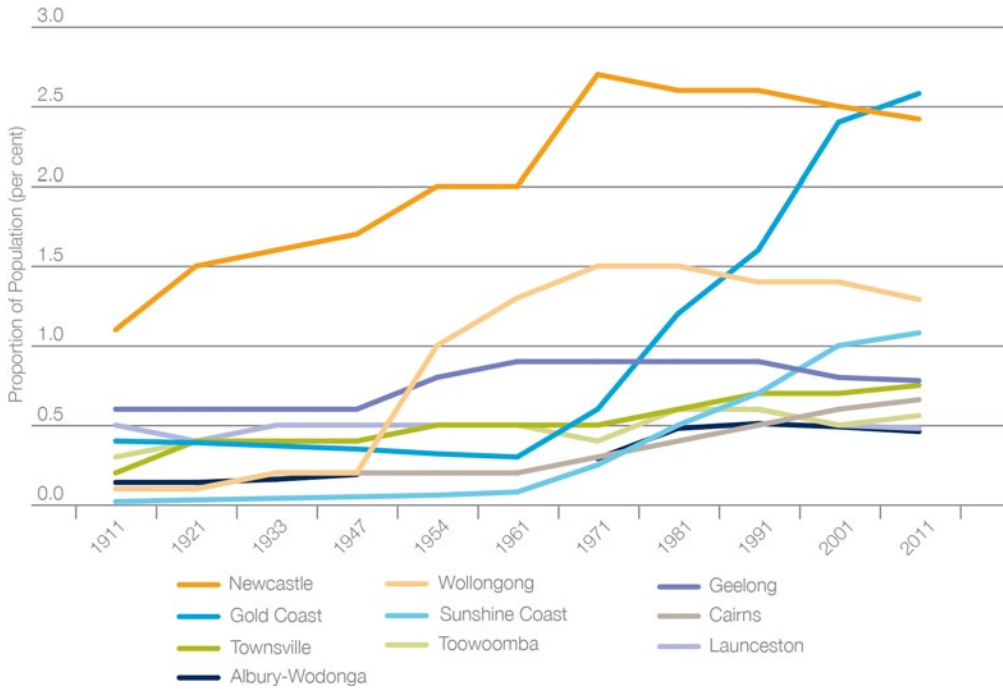
Source: ABS 2008, 2010b

The changing fortunes of Australia’s capital cities over the last century are reflected in Figure 2-7. Sydney’s share of the Australian population grew through the 20th century until 1971, when 21.5 per cent of the country lived in Sydney. Since then, there has been a slight decline to 20.6 per cent. Melbourne took the brunt of Australia’s deindustrialisation that began in the 1970s but has managed to reinvent itself and resume its upward trajectory. Brisbane’s growth is sometimes seen as a recent phenomenon but in fact its proportion of the Australian population has been growing at a constant rate for the last 100 years. What has changed is the growth of areas adjoining Brisbane, the Gold Coast and the Sunshine Coast which now make up a 200-kilometre stretch of urban area. Perth’s growth rate kicked up after the first mining boom of the mid-1960s and while it has waxed and waned with the fortunes of that industry since then, it has always trended upward.

Adelaide, like Melbourne, was also heavily dependent on manufacturing and has recorded a decline in proportion of Australia’s population from the time the first across-the-board tariff cuts were announced in 1974. In 1984, Adelaide was overtaken by Perth as Australia’s fourth largest city (ABS 2008). Hobart meanwhile has remained at almost exactly one per cent of Australia’s population for a century. Figure 2-7 illustrates that Canberra, despite being founded in 1913, is substantially a post war project. It has remained at around 1.5 per cent of the population since 1981. Figure 2-7 also reflects Darwin’s long climb from war time devastation. Today a bit over half a per cent of the population make their home in the northernmost capital.



**Figure 2-8** Proportion of Australia's population living in non-capital major cities 1911–2011



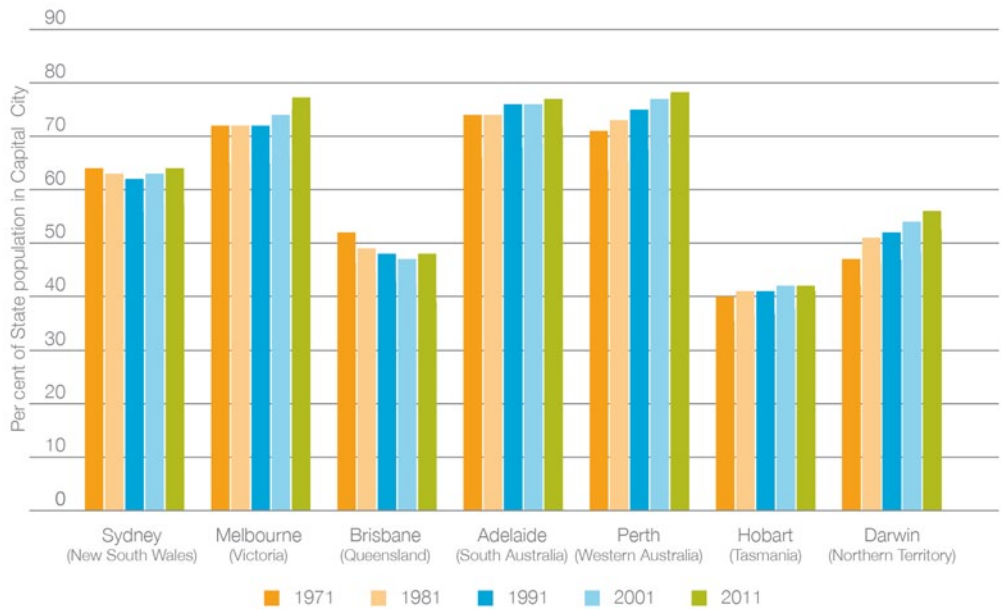
Note: Population figures for Sunshine Coast 1911, 1961 and Gold Coast 1911, 1961 were compiled by BITRE by summing up the individual towns located within these regions.

Source: ABS2008, 2010b

The non-capital major cities also show a varied experience over the 100-year analysis. Newcastle's and Wollongong's economies were heavily reliant on heavy industry throughout much of the 20th century and their progressive deindustrialisation since 1974 is clearly evident in Figure 2-8. Also striking is the rapid growth of first the Gold Coast and then the Sunshine Coast as Australia's own version of the 'Sunbelt' phenomenon that swept much of the developed world in the 1960s and 1970s. Perhaps reflecting this to a degree, Cairns and Townsville have also grown proportionally in the last 40 years. Most other major cities have remained relatively stable over the 100-year period in terms of their proportion of the Australian population.

## Capital city primacy

Figure 2-9 Capital city primacy 1971–2011



Source: ABS 2012d

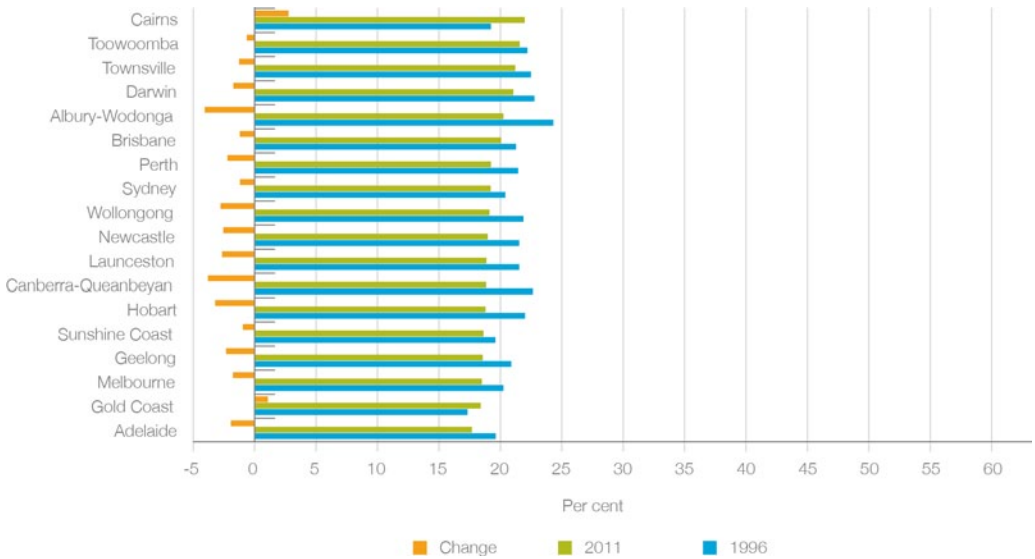
Australia's post-European settlement pattern has always been unusual, with a very high proportion of its population living in the former colonial capitals. Figure 2-9 shows the proportion of each state's/territory's population living in the respective capital cities; this is referred to as the primacy of the capitals. Primacy remained relatively stable at just over 60 per cent in the 30 years between 1971 and the turn of the century. This past decade has seen an increase in primacy in those states where primacy was already high: Victoria, Western Australia and South Australia. Brisbane's primacy in Queensland declined between 1971 and 2011 but with a slight kick-up between 2001 and 2011. This is largely due to population increases in the Gold Coast and Sunshine Coast, as well as Brisbane. Sydney's primacy has remained relatively stable at a little over 60 per cent.

## Age structure

The following four graphs show the age structure of each major city. By dividing populations into 0–14, 15–24, 25–64 and 65 and over, analysis of a city can show the proportion of the population at retirement age, at working age and those coming through at younger ages.

This section is also essential for a better understanding of workforce participation, to be discussed in the next chapter.

Figure 2-10 Population aged 0–14 by major city, 1996 and 2011

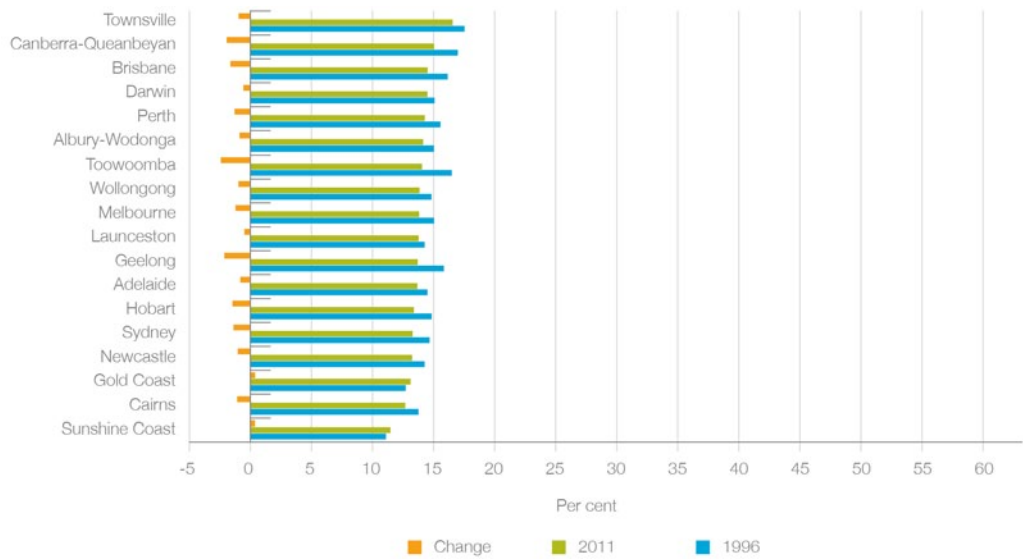


Note: Data unavailable for Toowoomba 1996.

Source: ABS 2000, 2002, 2012b

Figure 2-10 shows a general decline in the proportion of children across Australia’s major cities with the exception of Cairns and the Gold Coast.

Figure 2-11 Population aged 15–24 by major city, 1996 and 2011

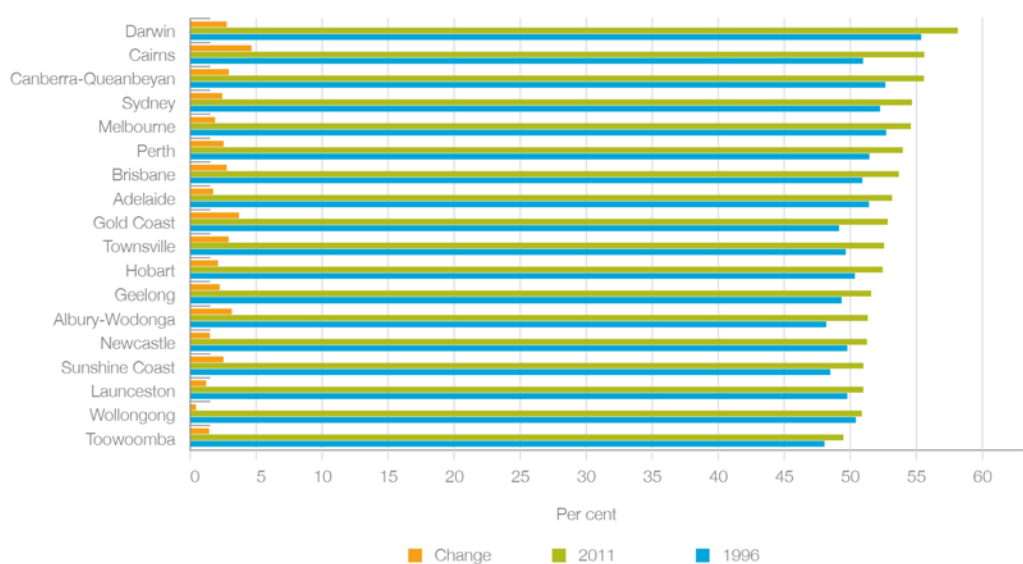


Note: Data unavailable for Toowoomba 1996.

Source: ABS 2000, 2002, 2012b

All cities, with the exception of the Gold Coast and the Sunshine Coast, have seen a decline in the proportion of young adults. Geelong and Toowoomba have seen the greatest decrease in the percentage of young adults. The trend is of concern because it reflects a relatively small pool of workforce entrants (Figure 2-11) compared to the proportion of people leaving the workforce, as illustrated in Figure 2-13.

Figure 2-12 Population aged 25–64 by major city, 1996 and 2011

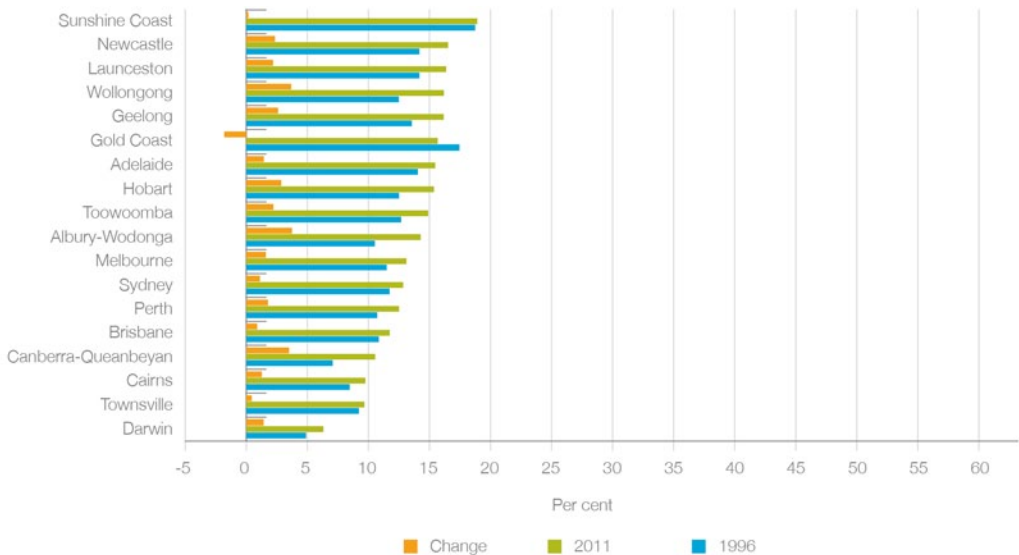


Note: Data unavailable for Toowoomba 1996.

Source: ABS 2000, 2002, 2012b

The proportion of the population that is of traditional working age is remarkably similar across cities (Figure 2-12). In contrast to the decline in the proportion of under-25s, the working age population has grown across all cities. This is due partly to the bulge in the number of so-called baby boomers at the top of this age group and partly to the age profile of immigrants. It is important to note that Figure 2-12 represents only the potential workforce, not those actually working. In the next chapter it will be shown that workforce participation rates can vary significantly between cities.

**Figure 2-13 Population aged 65 and over by major city, 1996 and 2011**



**Note:** The Gold Coast is the only city where the proportion of the population aged 65 and over has declined. The age structure of this city varies – young families predominate in the north, whereas the oldest population profile in Australia can be seen in the Tweed Shire. A boundary change in the northern part of the city in 2011 is likely to have been responsible for an apparent decrease in the size of the older section of its population. Data unavailable for Toowoomba 1996.

**Source:** ABS 2000, 2002, 2012b

The growth in the number of people aged 65 and over in cities where the population is already quite old – for example, Newcastle, Wollongong, Launceston and Geelong – is of particular concern because of their very low overall population growth rates (Figure 2-13). This suggests that structural ageing may become progressively more pronounced in these cities over the coming decades.

## Conclusion

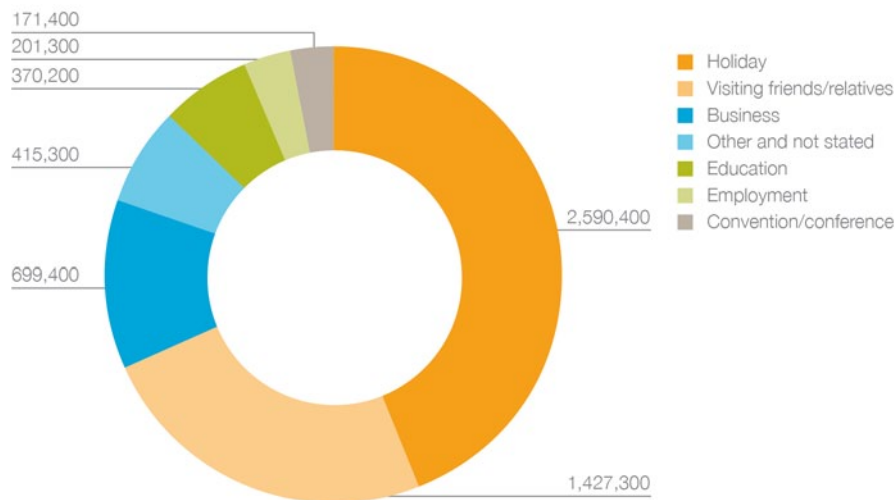
The first Intergenerational Report (Australian Government 2002) brought the issue of an ageing population into the national consciousness. Australia's ability to make population policy for 30 to 40 years ahead has enabled it to rebalance its population age structure to a degree, mainly through a carefully targeted immigration program. The country is therefore in a relatively good position compared to many comparable countries (Piggott 2012). Nevertheless, an ageing population will be a feature of Australian cities for at least the next four decades, meaning there will need to be a commensurate increase in productivity to prevent living standards from falling.

### Tourism in major cities

While tourism advertisements often portray Australia’s natural beauty using images of Uluru, the Great Barrier Reef and Kakadu, major cities are where tourists travelling to and within Australia spend most of their time.

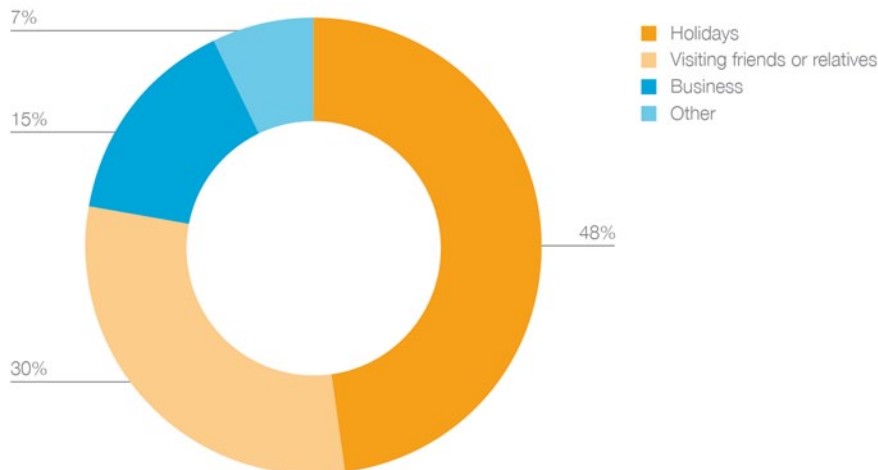
The World Tourism Organization defines both international and domestic tourists as people ‘traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes’ (United Nations World Tourism Organization 1995). Australian tourism statistics follow this convention and include travel to and within Australia for reasons including education, employment, health, business, conferences, conventions, exhibitions and working holidays.

Figure 2-14 International tourists to Australia reasons for travel, year to March 2012



Source: Tourism Research Australia 2012b

Figure 2-15 Australian tourists reason for travel, year to March 2012

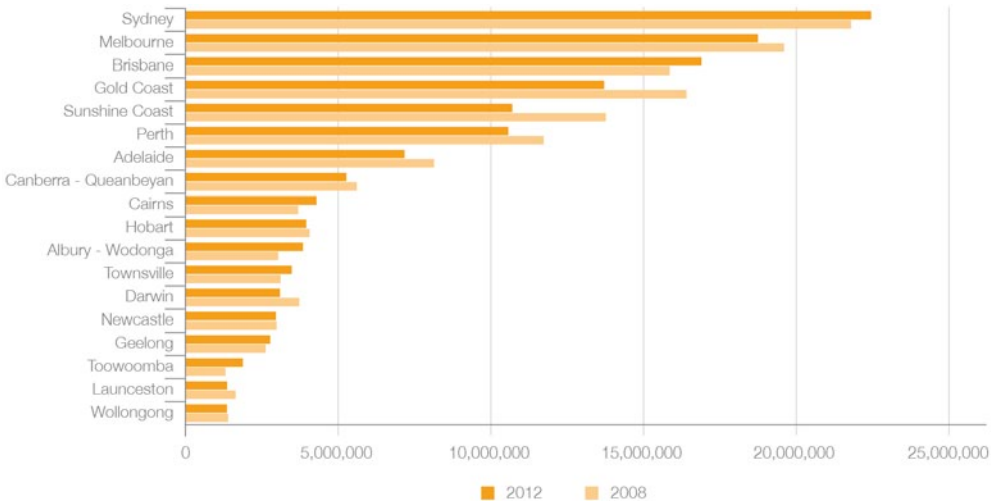


Source: Tourism Research Australia 2012c

Figure 2-15 shows that the reasons for travel in Australia are broadly similar for international and domestic tourists, with holidays and visiting friends and relatives making up around three-quarters of travel.

Travel by Australians

Figure 2-16 Domestic visitor nights



Source: Tourism Research Australia 2012c

The following section has used data from visitor night statistics from Tourism Research Australia (2012b). In the 12 months to March 2012 Australian residents spent a total of 279 million nights away from home within Australia. The 18 major cities accounted for 50 per cent of those nights. Figure 2-16 shows that, while Sydney and Melbourne are still significant destinations, in contrast to international travellers (Figure 2-17) domestic travellers spend proportionally more time in regional cities and cities perceived as more holiday oriented, such as the Gold Coast and the Sunshine Coast.

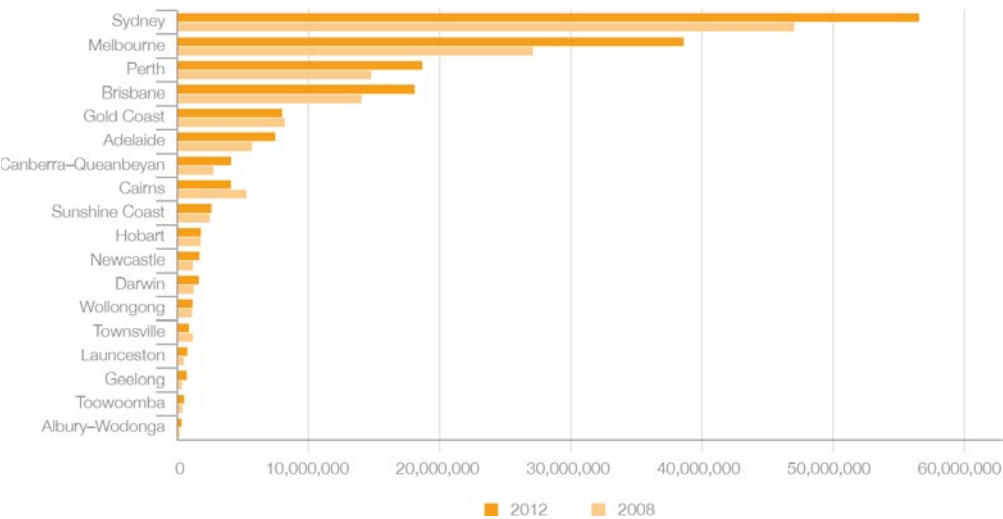
Australians made 7.8 million short-term trips overseas in 2011, up from 7.1 million visits in 2010 and more than double the level 10 years ago (3.4 million visits in 2001). Strong growth in outbound travel to short-haul holiday destinations in the region, such as Indonesia (Bali), Thailand and Fiji, are competing with many of Australia's beach holiday destinations, particularly those in Queensland, as shown in Figure 2-16 (RBA 2011). Increased air capacity, lower airfares and the strong Australian dollar have also contributed to this situation.

In contrast to the growth in outbound tourism, the major component of domestic growth over the last decade has been short breaks (1-3 nights) intrastate, increasingly staying with friends or relatives.

### International travel to Australia

The number of international travellers to Australia continues to grow, with 5.5 million international tourists coming to Australia in the 12 months to March 2012. This represented a one per cent increase on the corresponding period to March 2011, and a five per cent increase over the corresponding period to March 2008. International tourists to Australia spent 197 million nights here, of which 168.6 million, or 82 per cent, were spent in our major cities (Tourism Research Australia 2012b).

Figure 2-17 International visitor nights



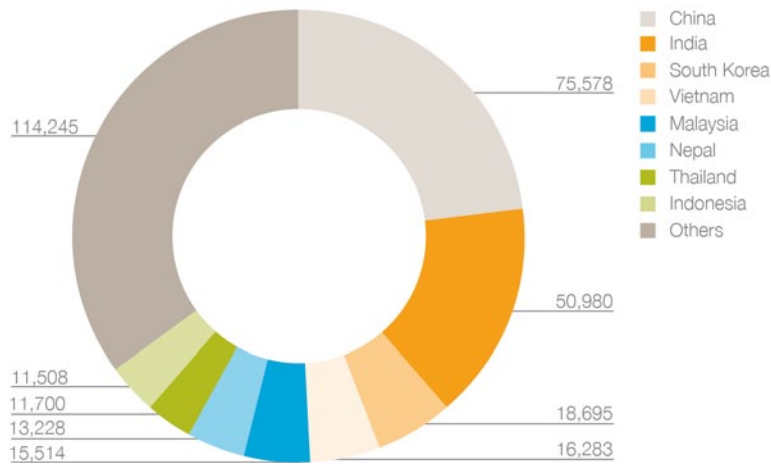
Source: Tourism Research Australia 2012b

While there has been a decline in visitor numbers from the UK, Europe, the USA and Japan in the year ending March 2012, the number of Chinese visitors grew by 14 per cent to 530,000 compared to the previous year. This was complemented by strong growth in the number of Indian, Taiwanese and Indonesian visitors. In fact China is now Australia's largest source market in terms of economic value, worth \$3.5 billion.

Sydney, Melbourne, Perth and Brisbane airports are Australia's major gateways for international travellers, accounting for 94 per cent of international passenger movements and, as Figure 2-17 shows, these cities have benefited from a rising share of overseas visitor nights in contrast to other cities. It is also worth noting that this is reflected in expenditure by international tourists, with Sydney and Melbourne accounting for \$9.195 billion of foreign tourist expenditure in 2010-11 – more than the other major cities combined and significantly more than was expended in these two centres by Australian travellers.

This trend also reflects the strong growth in the number of Chinese visitors who demonstrate a strong propensity for travel to capital cities, whether for holidays, business or education and the decline in the number of Japanese tourists. This has had a more pronounced effect on overall tourism demand in some regional destinations, particularly Cairns.



**Figure 2-18** Number of international student visa holders in Australia 2010–11

Source: Department of Immigration and Citizenship 2011

### Importance of events to tourism in cities

Since the late 1980s all states and territories have created dedicated agencies for securing major events. Major strategies and events play a significant role in attracting tourism in their own right and in generating additional tourist and economic activity in cities, particularly in quieter times of the year for hospitality operators. Precinct planning and transport infrastructure is critical to hosting these events.

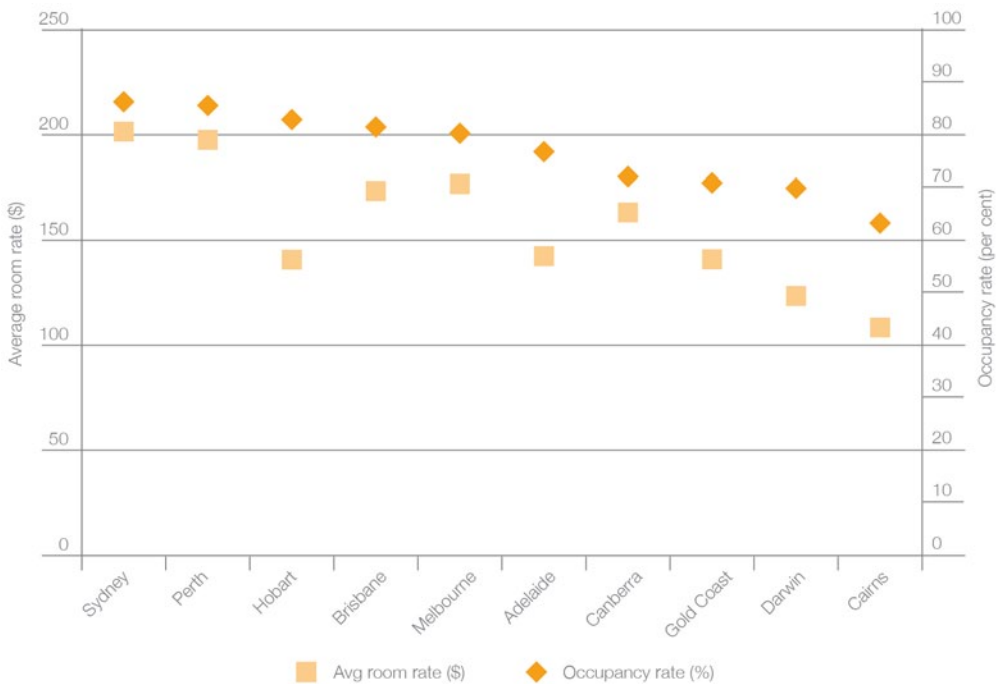
Melbourne holds the unofficial status as the events capital of Australia. It hosts a range of business and cultural events, but it is sporting events such as the Spring Racing Carnival, the Australian Tennis Open, the Australian Football League Grand Final, the Boxing Day Cricket Test and the Grand Prix that are big tourist drawcards. The 2011 Spring Racing Carnival, which includes the Melbourne Cup, is estimated to have contributed more than \$113.1 million in direct spending from visitors from out of state (IER 2011). Underlining its importance to the economy, it was further estimated that out-of-state visitors spent more than \$11.5 million on fashion items and accessories as part of their attendance at the 2011 Spring Racing Carnival (IER 2011).

Major cultural events also play a significant role. It was estimated that the Renaissance exhibition at the National Gallery of Australia and the Handwritten exhibition at the National Library of Australia were largely responsible for the increase in day trips to the ACT to 505,000 people in the 2012 March quarter, up from 390,000 over the same three months the previous year, when there were no significant events (Knaus 2012).

### Accommodation supply

The supply of hotel rooms has become a pressing issue in the Australian tourism sector over the last decade. Demand for hotel rooms has strengthened around Australia but the supply of hotel rooms has not grown at the same pace, increasing only 2.8 per cent in the last four years. This will likely see average occupancy rates rise from 65 per cent now to 68 per cent by the end of 2014 - the highest rate since occupancy rate data was first compiled (Deloitte Access Economics 2012).

Figure 2-19 Major city occupancy rates and average room rates, December 2011



Source: Tourism and Transport Forum 2012



The undersupply of hotel rooms is most acute in capital city CBDs, where average occupancy rates sit around 80 per cent. Perth and Sydney have average occupancy rates of approximately 85 per cent. By the end of the 2014 they are expected to be 89 per cent and 88 per cent respectively, which equates to average room rates of \$249 and \$210 respectively. This reflects the reality that those cities' CBDs are at, or close to, capacity several nights a week (Tourism and Transport Forum 2012).

*Surfers Paradise, Gold Coast.*

Image courtesy of Hyder Consulting and Kevin Chamberlain Photography

# Settlement

## Introduction

The release of housing data in the first tranche of the *Census of Population and Housing 2011* has allowed a detailed examination of housing patterns in Australia’s major cities over the past 15 years. This section will examine dwelling composition, housing finance, land supply, occupancy and social housing provision.

## Background

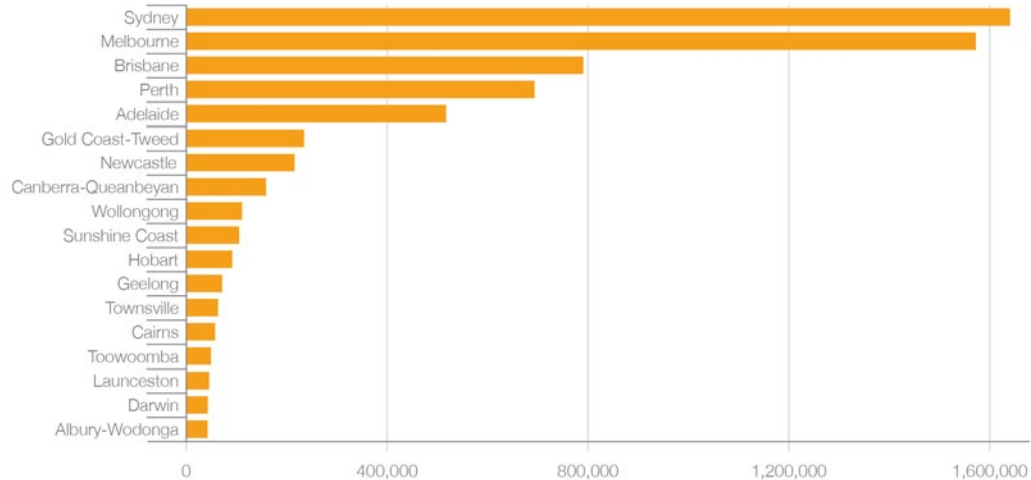
### Historical context

Unlike many major cities around the world, Australian cities have typically been characterised by low-density detached housing. For example, despite the population of NSW being only a little over 30,000 in 1830, Sydney’s geographic area was already larger than that of London, then the most populous city in the world (Canon 1985, ABS 2008). By the late 19th Century high personal incomes, relatively evenly distributed throughout the population, allowed Australia to become the world’s first suburban nation (Frost and Dingle 1995, Davidson 1995).

The legacy of two centuries of low-density settlement is both physical and cultural. Culturally, the experience and expectation for generations of Australians has been of detached houses in the suburbs. Physically, the minimum service life of a dwelling is at least 50 years, so turnover of stock is slow. Therefore, the physical structure of our cities will change only incrementally over time. Consequently, Australia’s detached housing heritage will continue to dominate the composition of Australia’s dwelling stock for some time.

### Current settlement

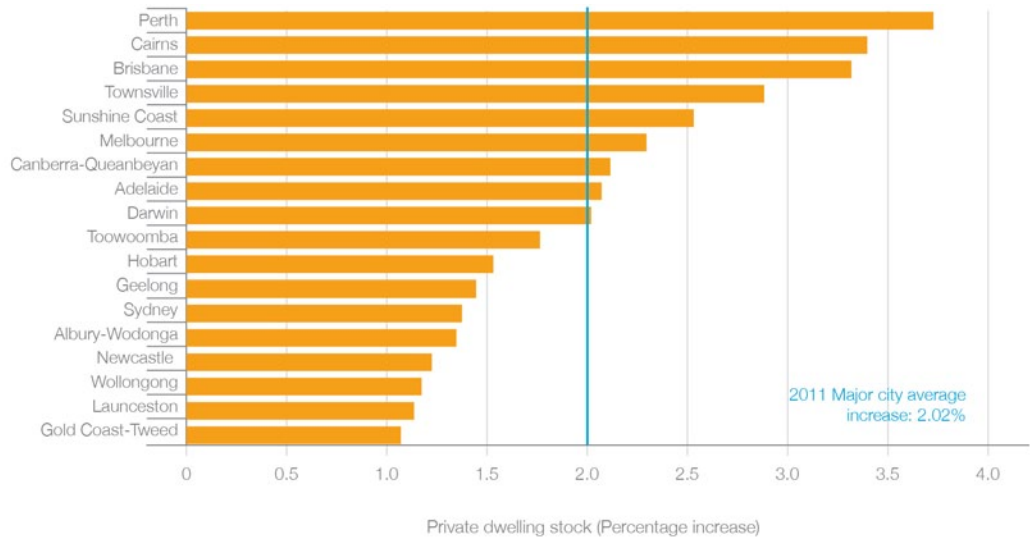
Figure 2-20      Total major city private dwelling stock 2011



Source: ABS 2012b

In 2011, Australia's 18 major cities held 75 per cent of the national private dwelling stock, together totalling 6,499,276 private dwellings (Figure 2-20). Sydney and Melbourne alone held 37 per cent of the national dwelling stock.

Figure 2-21      Average annual increases in major city occupied private dwelling stock 2006–11



Source: ABS 2007a, 2012b

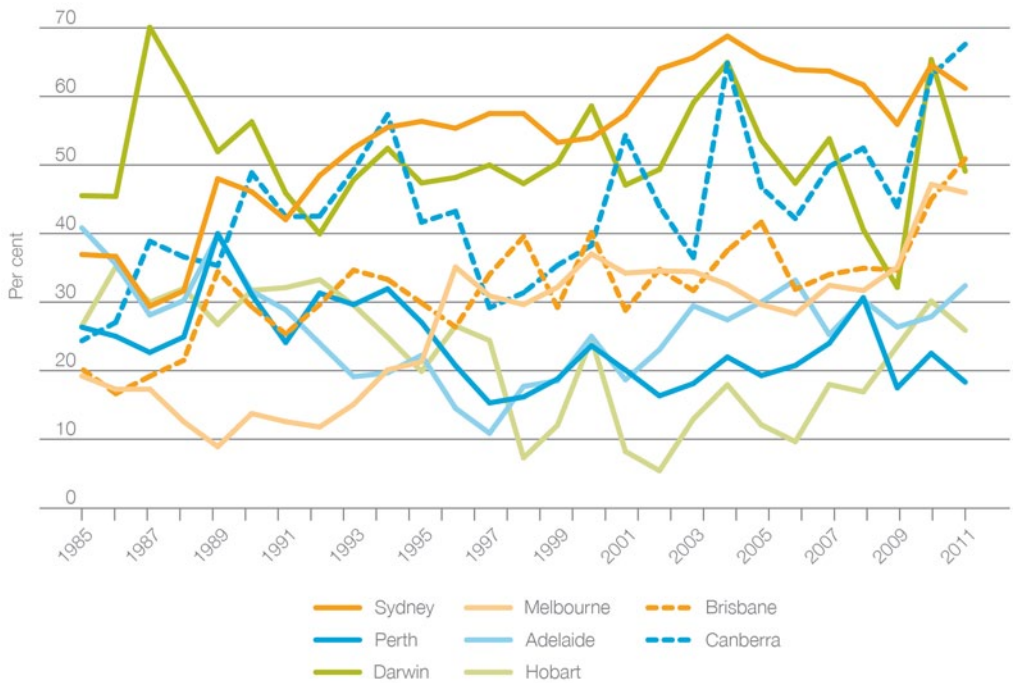
Occupied private dwelling stock in major cities increased at an average rate of 2.02 per cent annually between 2006 and 2011 (Figure 2-21). The national unoccupied rate since the 1970s has tended to be around 9 or 10 per cent at any time – see Figure 2-25.

## Dwelling composition

Dwelling composition refers to the differing proportions of detached houses and various forms of attached dwellings within a given housing stock. There has been much pressure on governments at all levels to assist in alleviating upward pressure on house prices by helping increase dwelling supply. Part of increasing that supply is increasing the efficiency of land use through attached dwellings. Replacing separate houses in redevelopments with higher-density dwellings such as townhouses and units and building higher-density greenfield developments not only contributes to supply but can also improve the viability and utilisation of infrastructure such as public transport. This section examines the rate at which the dwelling composition in Australia's major cities is shifting towards attached dwellings.

## Proportion of attached dwellings

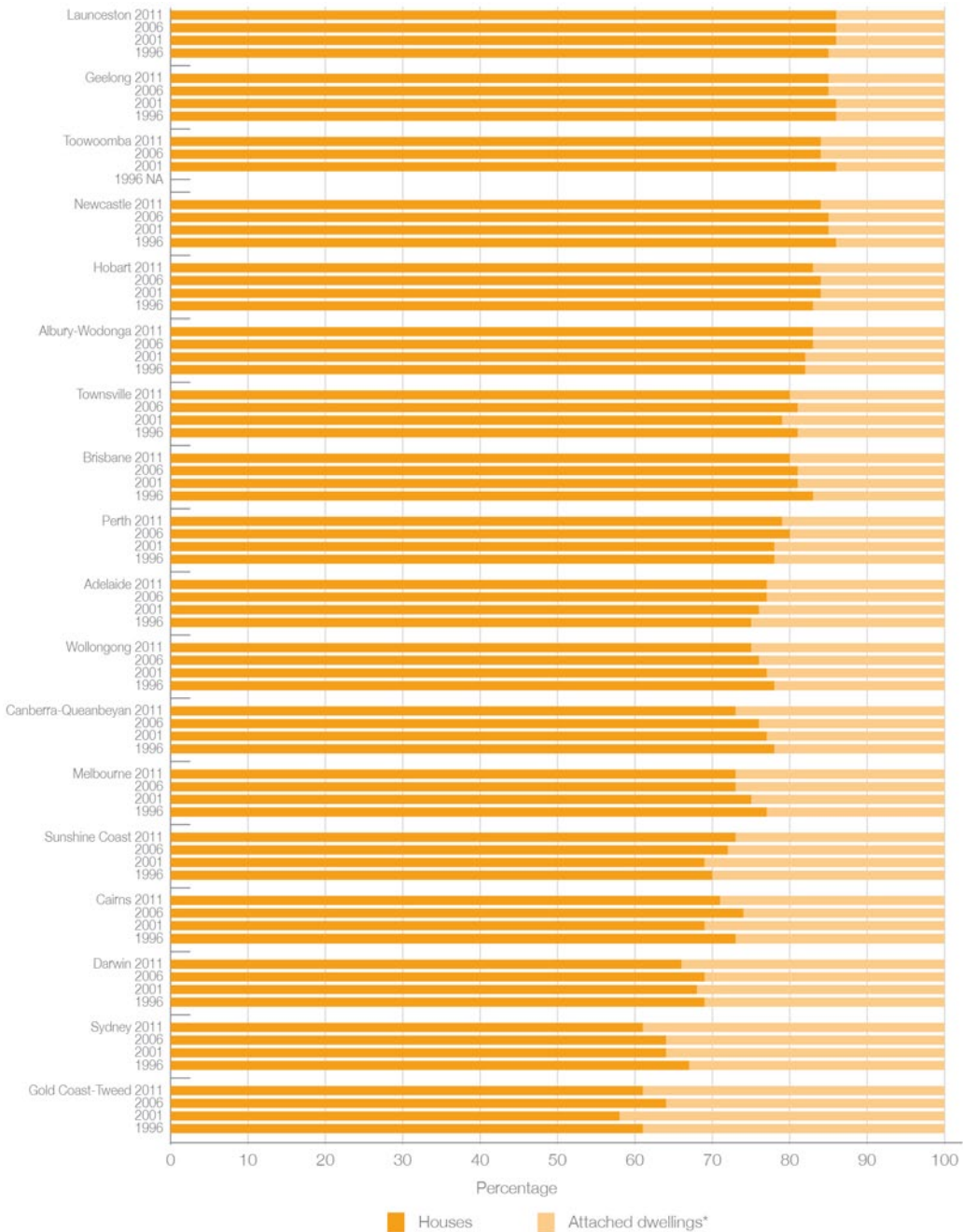
Figure 2-22 Attached dwelling approvals 1985–2011



Source: ABS 2012a

Across Australia's capital cities, the proportion of new dwelling approvals for attached dwellings has varied over the past three decades (Figure 2-22). Canberra is currently leading the shift towards higher-density housing, with an upward shift of 40 per cent since 1985. Canberra's dwelling approvals now contain the highest proportion of attached dwellings, approaching 70 per cent. There has also been a proportional majority of attached dwelling approvals in Sydney and Darwin for some years, and Brisbane and Melbourne have recently displayed a rising trend. By contrast, Adelaide, Hobart and Perth have had a low proportion of attached dwellings approved for several decades.

Figure 2-23 Proportion of houses and attached dwellings 1996–2011



Note: \*Attached dwellings includes semi-detached, terrace/row/townhouses, flats, units and apartments.

Source: ABS 2000, 2002, 2007a, 2012b



Separate houses remain the dominant component of the existing housing stock in Australia's major cities. Across major cities from 1996 to 2011 there was a 2.6 per cent overall shift towards attached dwellings, from 25.1 to 27.7 per cent (Figure 2-23, ABS 2000, 2002, 2007a, 2012b). Roughly two-thirds of major cities showed some proportional increase in attached dwellings over the period, whereas the Sunshine Coast, Adelaide, and Albury-Wodonga increased their proportion of separate houses. Darwin, Sydney, and the Gold Coast currently contain the highest proportion of attached dwellings.

Overall, the trend towards attached dwellings is unlikely to be strong enough to have significant impact on housing density in the short or medium term. That is, Australia's major city housing stock still comprises a majority of separate houses and is likely to do so for some time. Considering population growth rates and that many cities are experiencing physical or cost constraints on greenfields lot production, there is unlikely to be an adequate increase in the number of new dwellings to satisfy growing underlying demand without a significant rise in the proportion of attached dwellings in major city housing stock.

## Occupancy rates

Occupancy rates respond to the relationship between the number of additional dwellings required by population increase and the number of these new dwellings actually built. Small shifts in occupancy rates can significantly alter the number of dwellings required to house a population. As an example, Sydney's current population of 4.6 million occupies 1.6 million dwellings, resulting in an occupancy rate around 2.8 persons per household. Theoretically, if the occupancy rate rose to 2.9 persons per household then more than 50,000 dwellings would no longer be required. Sydney's current population growth rate demands roughly 20,000 new dwellings per year, so one impact of a theoretical increase of just 0.1 in Sydney's occupancy rate would be that no additional dwellings would need to be constructed for two and a half years.

This section will examine the effect of growth in population and dwellings stocks, and changes in household composition.

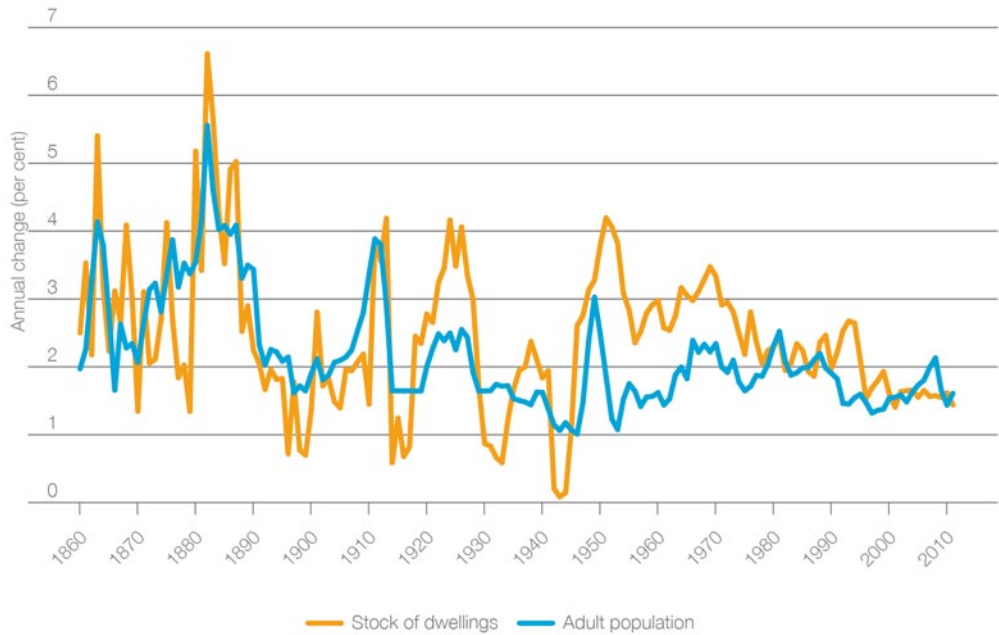
*Sydney.*

Image courtesy of Bill Boyd



Historical context

Figure 2-24 National growth in adult population and dwelling stock 1860–2012



Note: Original estimates to 2010 were published in Stapledon, N 2010, *A History of Housing Prices in Australia 1880–2010* UNSW School of Economics Discussion Paper Series 2010/18. These have been updated to 2012. For a more recent analysis see Stapledon, N 2012, 'Trends and Cycles in Sydney and Melbourne House Prices from 1880 to 2011', published in *Australian Economic History Review* 52(3): 294–317 in November 2012.

Source: Graph used with the kind permission of Dr Nigel Stapledon.

Australia's recent levels of housing supply have been lower than population growth levels for the most sustained period in a century (Figure 2-24). The four previous periods over the past 150 years when population growth levels were significantly greater than increases in dwelling stocks were the 1890s Depression, World War I, the Great Depression and World War II.



Figure 2-25      National average occupancy rate 1860–2012



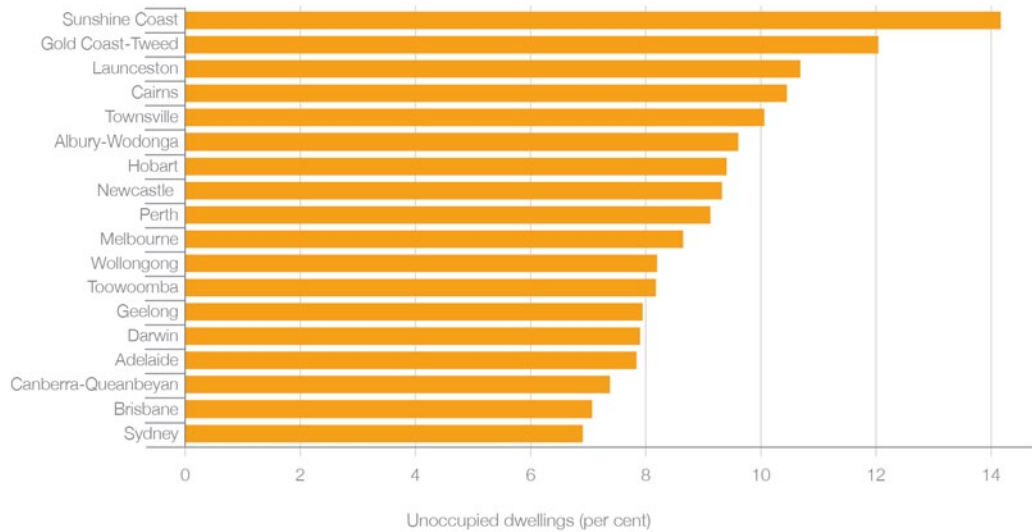
Source: Created from data in Stapledon 2012 and ABS 3105.0.65.001 *Australian Historical Population Statistics*, 2008

Household occupancy rates rose steeply from 1860 to 1889 as cities struggled to cope with population growth rates up to four times higher than those of today (Frost and Dingle 1995). Occupancy rates fell just as quickly after the 1890 crash before stabilising. There was a further fall during World War I with troops in Europe and the Middle East and a virtual cessation in migration.

From 1920, occupancy rates again started to fall, punctuated only by World War II. They stopped falling in the mid-2000s and have even begun to rise slightly, reflecting the growing gap between population growth and dwelling supply (Figure 2-25).

Somewhat paradoxically, Australia finds itself in a position of also having an increasing number of unoccupied houses. Reasons for this increase are not fully understood, particularly considering the shifting trend in occupancy rates since the mid-2000s.

Figure 2-26 Total dwellings unoccupied 2011

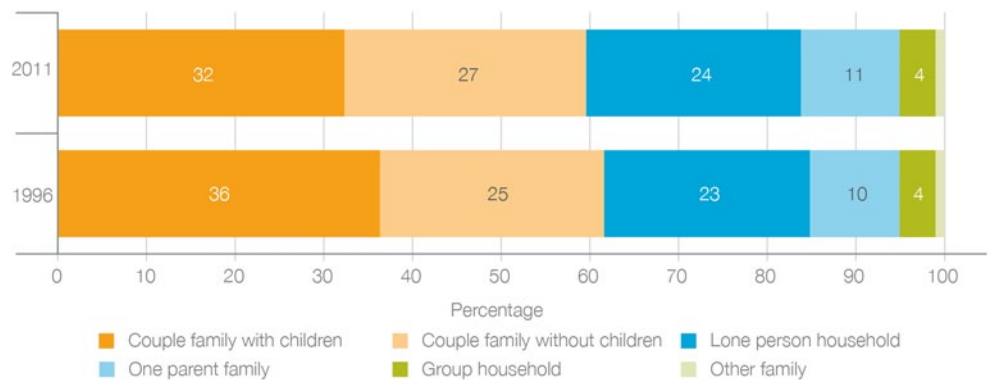


Source: ABS 2012e

Australia’s major cities have varied proportions of unoccupied dwellings (Figure 2-26). Capital cities generally appear to have low proportions of unoccupied dwellings while Queensland’s regional coastal major cities generally have the highest proportions. As popular holiday destinations, the proportions of unoccupied dwellings in these cities is probably due to the number of holiday houses.

### Household composition

Figure 2-27 Australian household composition 1996–2011



Source: ABS 2000, 2012b

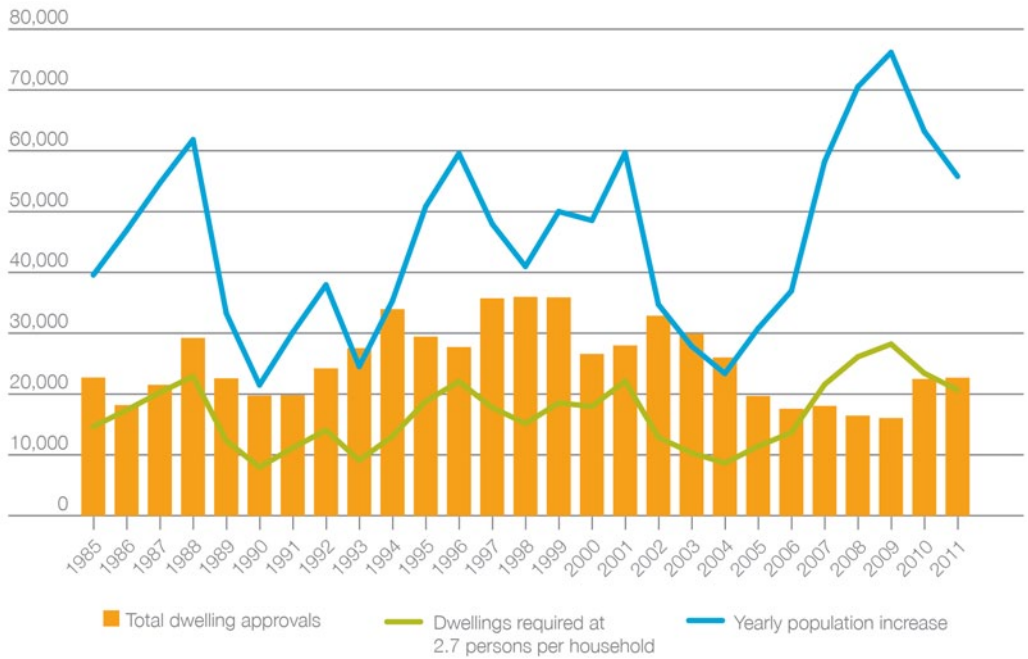
From 1996 to 2011, households with one or two people (couples without children, lone person households) grew as a proportion of households by three per cent. In the same period, the proportion of couple families with children declined by around four per cent, while the proportion of one-parent families grew slightly (Figure 2-27).

If household occupancy rates are increasing at the same time as the proportion of smaller households is rising, the increase in occupancy rates must be occurring in family households.

Case study: Sydney’s housing supply and occupancy rate

For brevity, this case study will focus on Sydney.

Figure 2-28 Sydney annual population increase and dwelling approvals  
1985–2011



Source: ABS 2012a

Between the late 1980s and mid-2000s in Sydney, more dwellings were approved than were required to meet the 2011 major city average occupancy rate of 2.7 persons per household (Figure 2-28). This underpinned falling occupancy rates. However, since 2004, housing construction in Sydney has not kept pace with population growth. Consequently, a gap has opened between the rate of dwelling increase and population increase.

Figure 2-29 Sydney's dwelling requirement and occupancy rate 1997–2010



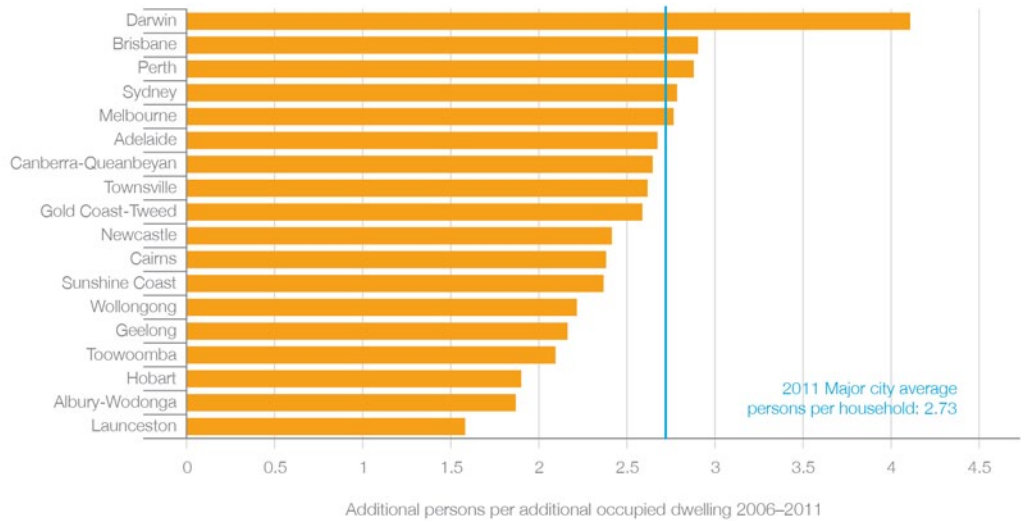
Source: ABS 2011, 2012a

The orange line in Figure 2-29 shows the gap between population increase and dwelling supply. Above the zero line there are more dwellings being built than the population increase based on an occupancy rate of 2.7 persons per household. Below zero less dwellings are being constructed than is required for the population increase. In June 2007 the orange line went below zero. In response, the occupancy rate (the blue line) kicked up. Based on trajectories, this trend appears likely to continue. Counteracting such a trend would require a significant number of extra dwellings to be constructed or a substantial moderation of population growth.

This analysis is backed by similar findings from the National Housing Supply Council's 2012 report.

Current growth in housing stocks and population

Figure 2-30      Number of additional persons per additional occupied dwelling  
2006–11



Source: ABS 2007a, 2012b

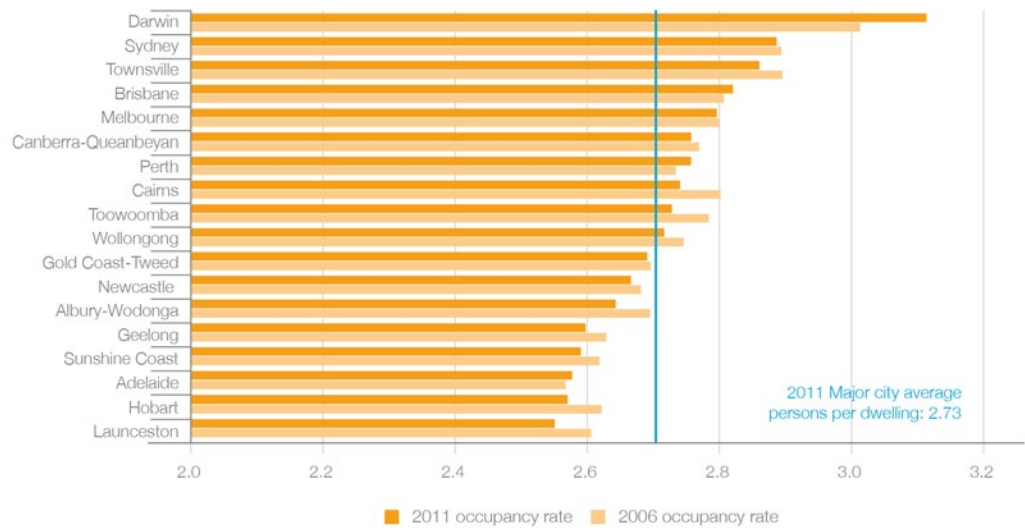
Growth in housing stocks relative to population growth varied significantly between major cities from 2001 to 2011 (Figure 2-30). Whilst this data illustrates recent levels of housing supply in the context of likely demand, it does not account for whether any city had a housing surplus or shortage relative to its population in 2001. Inferred trajectories for future housing supply would need to be interpreted in this context.

Harbour, Wollongong.



Current occupancy rates

Figure 2-31      Occupancy rates in major cities 2006–11



Source: ABS 2007a, 2012b

Individual occupancy rates also varied significantly within and between major cities from 1996 to 2011 (Figure 2-31). The relatively high occupancy rates in Sydney and Darwin since 2001 and the notable rise in Darwin reflect higher population growth relative to dwelling construction rates.

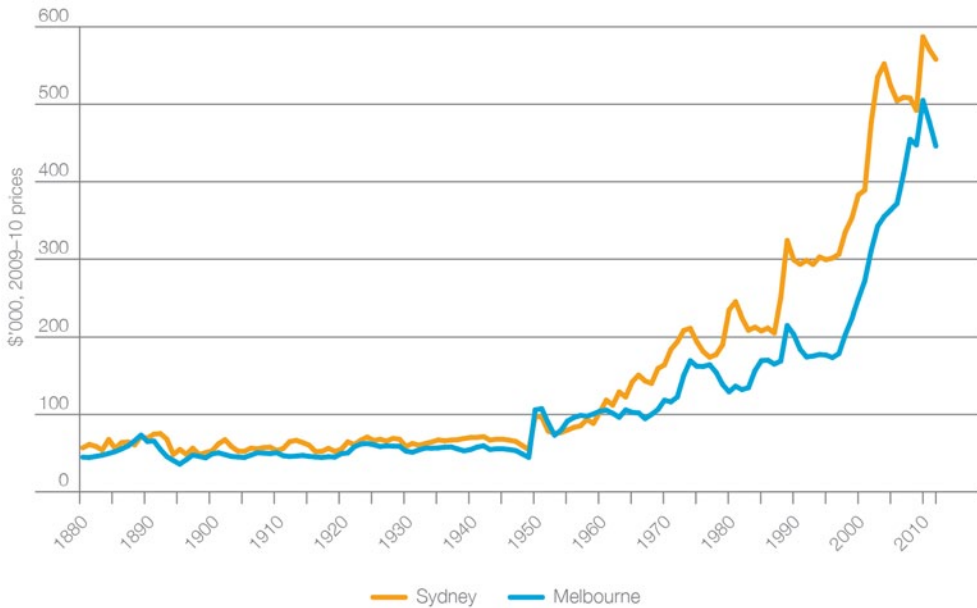
Occupancy rates also appear to align with age demographics, meaning that cities with higher occupancy rates tend to be those with younger populations. Comparing Figure 2-31 with Figure 2-13, the eight major cities with the highest occupancy rates are also those with the lowest proportion of the population over 65 years of age. Similarly, the cities with lower occupancy rates are largely those with greater proportions of their populations over 65 years of age.

House prices

The total value of Australian housing was estimated at \$4.85 trillion in July 2012, nearly four times the value of listed domestic equities (\$1.23 trillion) (RP Data 2012). Consequently, movement in house prices can have a substantial effect on the national economy.

## Historical context

Figure 2-32 Sydney and Melbourne house prices 1880–2012



Source: Stapledon 2012

Examining Australia's historical house prices for Sydney and Melbourne as illustrated in Figure 2-32, house prices boomed during the 1880s. The subsequent fall in house prices during the 1890s Depression was the sharpest ever in relative terms in Australian housing history and it took 60 years for prices to recover. Between 1943 and 1949, house price levels were fixed by the Commonwealth Government at 1942 levels to prevent asset inflation in wartime. Inflation in this period was relatively high and the real price of houses fell nearly 30 per cent. In response, housing supply was sharply reduced. A considerable black market in houses also emerged. The spike in house prices during the early 1950s was partly due to the release of government house price controls, partly a result of pent-up demand and partly due to a 30 per cent rise in inflation during the price control period. Prices then remained stable for around 20 years before tracking upwards, with notable corrections during periodic real estate crashes.

The 1996 housing boom saw the most sustained and most rapid increases in Australian house prices in at least 130 years. Some of the complex contributing factors to the 1996 boom may include the progressive deregulation of housing finance since the early 1980s, changes to Capital Gains Tax in late 1999 and the introduction of both the GST on housing and the First Home Owners Scheme in mid-2000 (The Treasury 2008).



### Taxation

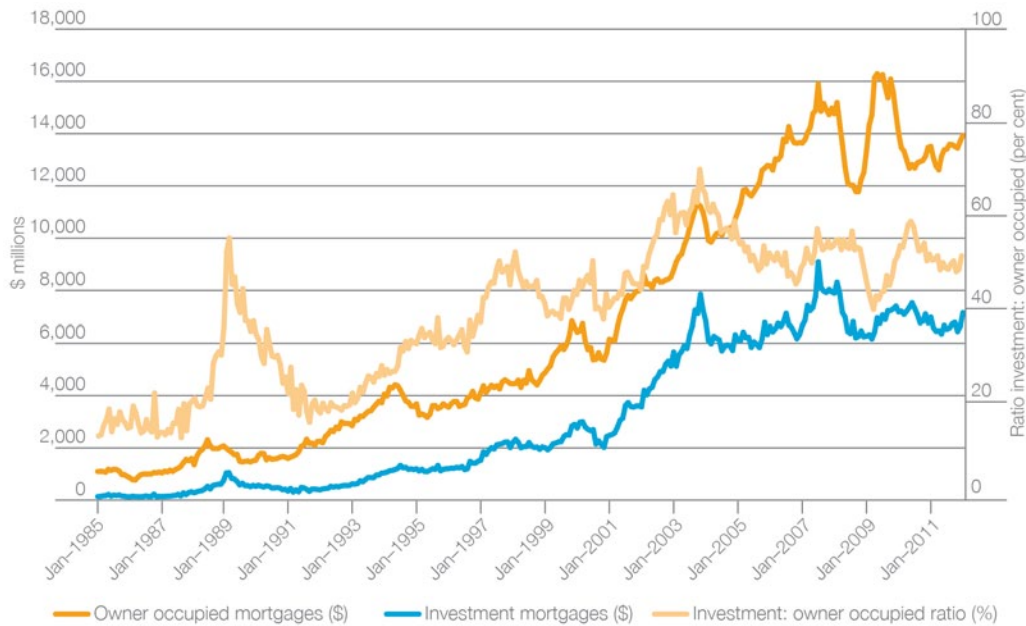
As discussed in *Australia's Future Tax System Review* (the Henry Review), a wide variety of taxes affect housing in Australia. The objectives of these taxes reflect various revenue-raising and social policy objectives. Due to the complex way in which taxation policy and the housing market interact, it is difficult to determine the ultimate flow of money through the system. Nevertheless, *Australia's Future Tax System Review* states that the most significant changes to tax and transfer settings for housing include the changes to Capital Gains Tax in 1999, increased infrastructure charges, the introduction of the GST on housing and the First Home Owners Scheme, as well as changes in rates, land taxes and stamp duty conveyancing (The Treasury 2010). However, the relationship between housing and taxation is more complex than can adequately be explored within the reporting format of the State of Australian Cities reports.

### Housing finance

House prices are affected by both the proportion of mortgaged dwellings and the amount of investment in housing. This section will explore recent trends in owner occupied and investment mortgages, and the changing proportion of households with mortgages.

#### Owner occupied and investment mortgages

Figure 2-33      Housing finance commitments 1985–2012



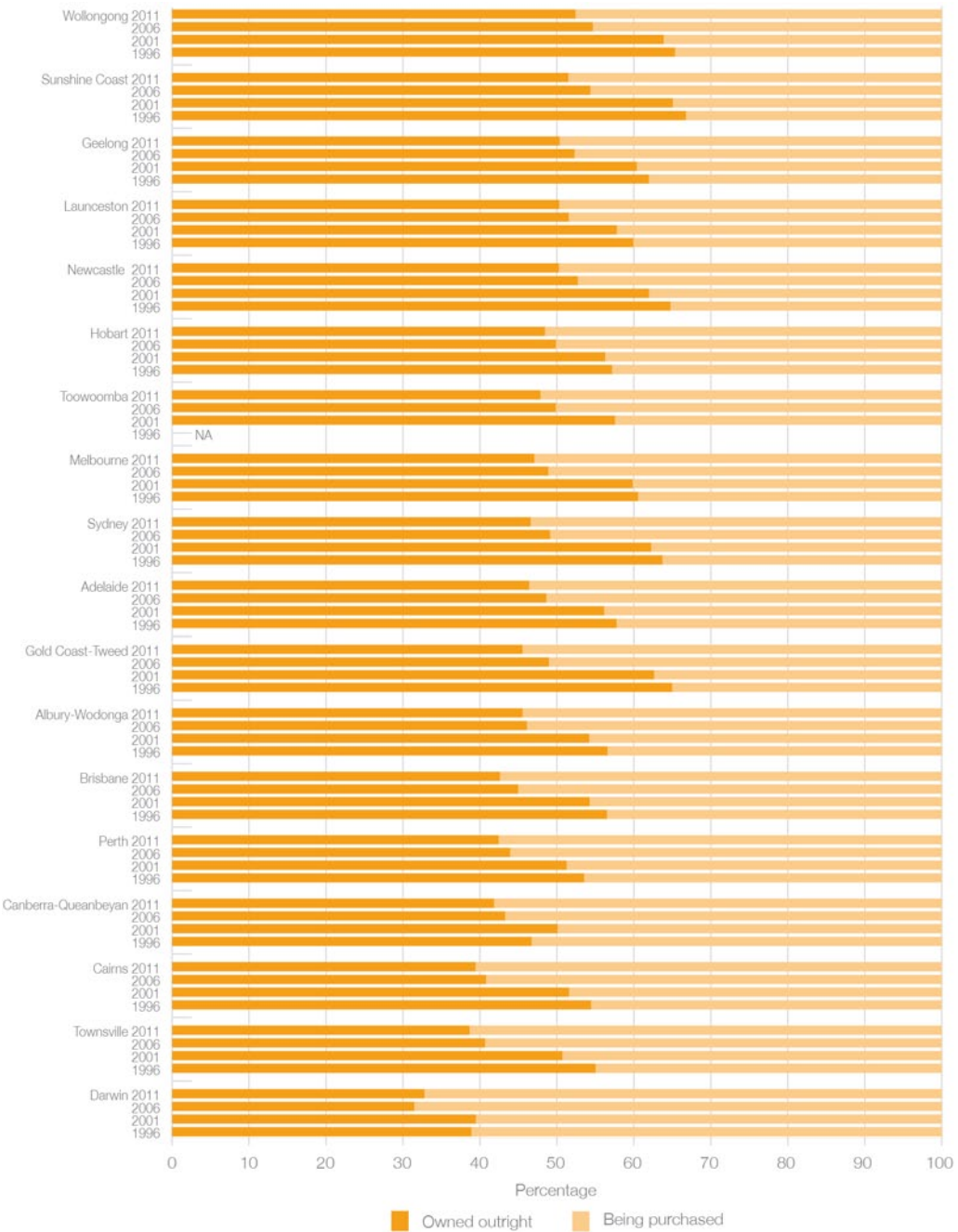
Source: Reserve Bank of Australia 2012

Figure 2-33 illustrates the relationship between owner occupied mortgages with housing investment mortgages from January 1985 to June 2012. The proportion of housing investment has remained reasonably stable at roughly half the dollar value of owner occupied investment from mid-2000 to 2012 (The Treasury 2008).



Proportion of owner occupied mortgaged dwellings

Figure 2-34 Proportion of owner occupied mortgaged dwellings 1996–2011



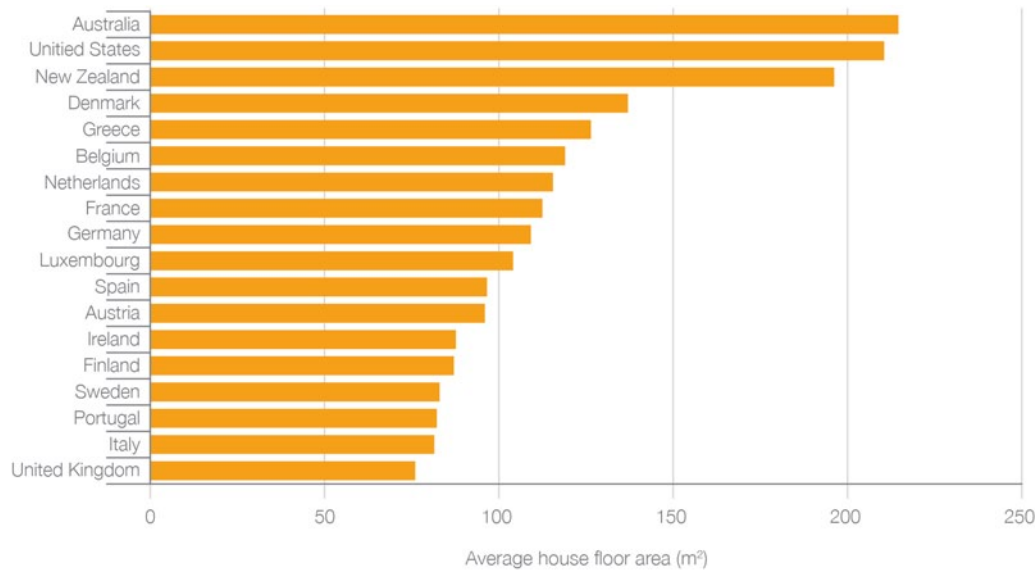
Source: ABS 2000, 2002, 2007a, 2012b

The proportion of dwellings owned outright decreased significantly in every Australian major city, both individually and combined from 1996 to 2011 (Figure 2-34). The proportion of total owner occupied major city dwellings owned outright decreased by 14 per cent over this time, from 60 per cent in 1996 to 46 per cent in 2011. The greatest downward shift in ownership occurred on the Gold Coast (19 per cent). In 1996, Canberra and Darwin were the only major cities with a majority owner occupied of mortgaged private dwellings, and in 2001 Darwin was the only major city in this position. By contrast, in 2011 the majority of major cities (13 of 18) contained the bulk of owner occupied private dwellings under finance.

Between 2001 and 2006, there was a notable jump in the proportion of owner occupied dwellings under finance from 42 per cent in 2001 to 52 per cent in 2006 (Figure 2-34). Significantly, the majority of major city owner occupied private dwellings changed from outright ownership to financed at the time of this jump. Causes of this jump may possibly relate to high purchasing activity after changes to Capital Gains Tax arrangements in 1999 (The Treasury 2008).

## House sizes and construction costs

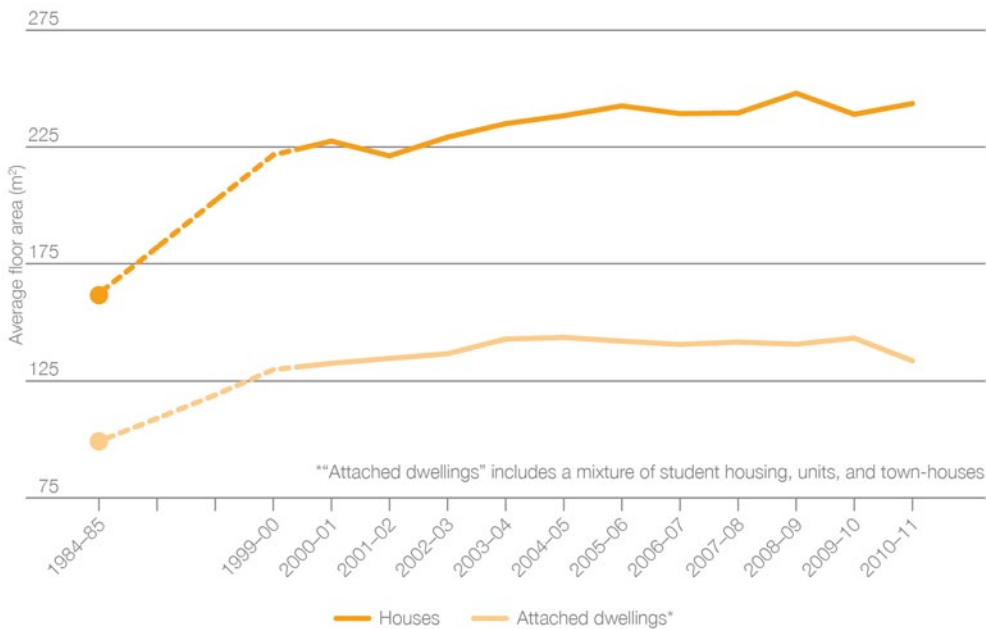
Figure 2-35 International average house sizes



Source: ComSec, 2009

Large houses have been commonly cited as a cause of rising house prices in Australia (Hall 2010). Figure 2-35 illustrates that Australia currently builds possibly the largest houses in the world, now having overtaken the United States.

Figure 2-36      Average size of new Australian dwellings 1984–2011



Source: ABS 2003, 2005, 2010, Switzer Report 2012

Australian dwelling sizes increased significantly between the mid-1980s and 2000s. However, the size of houses and attached dwellings appear to have plateaued (Figure 2-36).

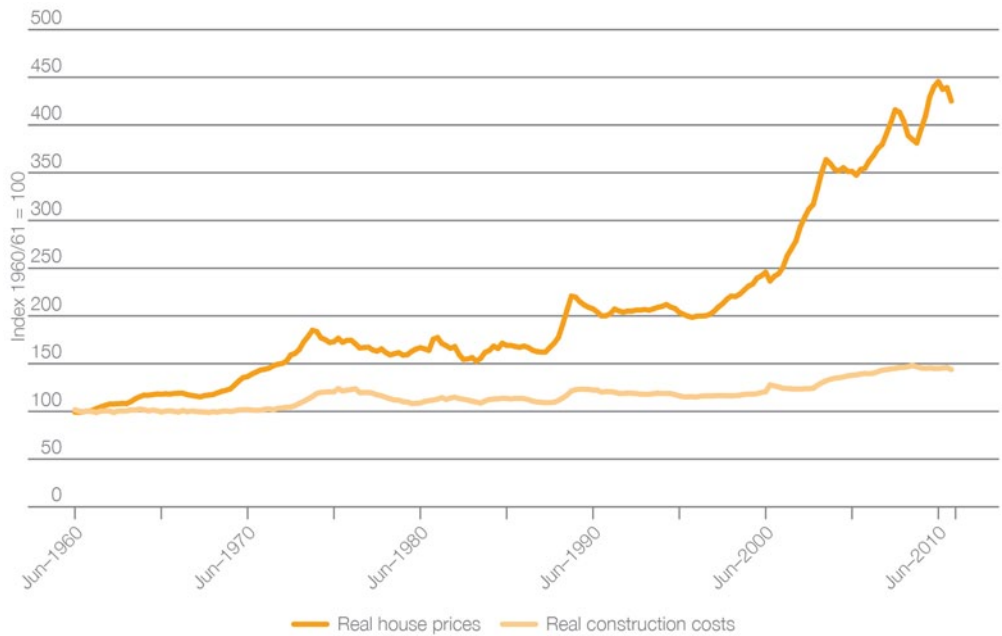
*Overlooking Townsville, Queensland.*

Image courtesy of Nigel Foster



Construction

Figure 2-37 Real house prices and construction costs June 1960 – March 2011



Source: Yates 2011 using data from Abelson and Chung, 2005, ABS, Australian Treasury, and REIA

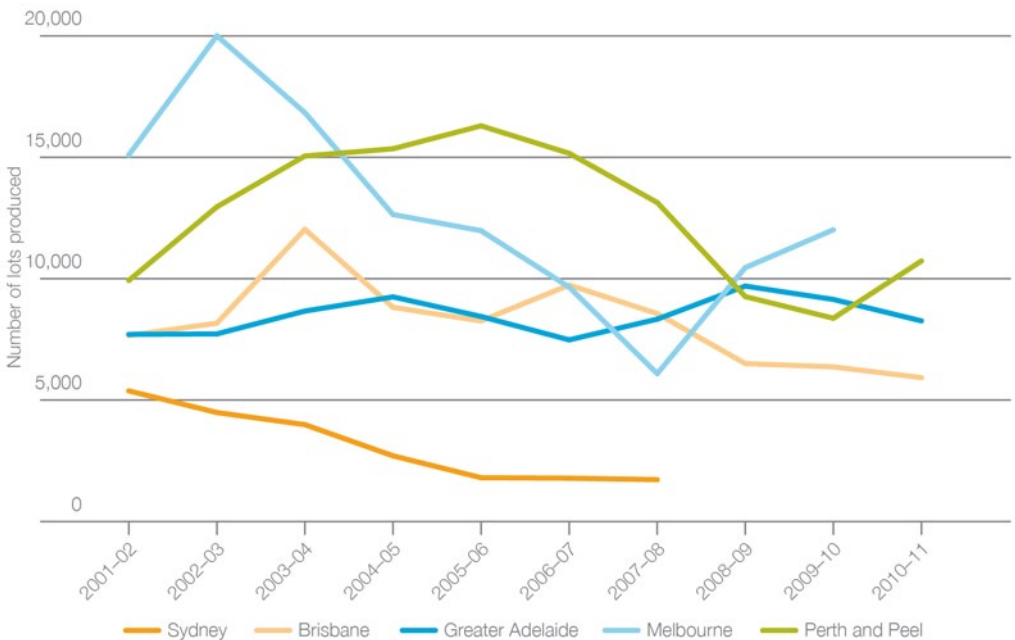
Unlike real house prices, real construction costs increased at a moderate rate for the last 40 years (indexed in Figure 2-37). Therefore, construction and material costs seem unlikely to have contributed significantly to rising house prices over the past decade.

## Land and housing supply

Land directly influences house prices through factors such as supply, location, block size and price. Land supply is traditionally a driver of house prices in greenfield developments. This section will examine recent lot production, trends in median lot sizes, the consequent median price paid per square metre for land and the influence of proximity to a CBD on land value and supply. This section complements the discussion on housing affordability in Chapter 5.

### Lot production

Figure 2-38 Capital city housing lot production 2001–11

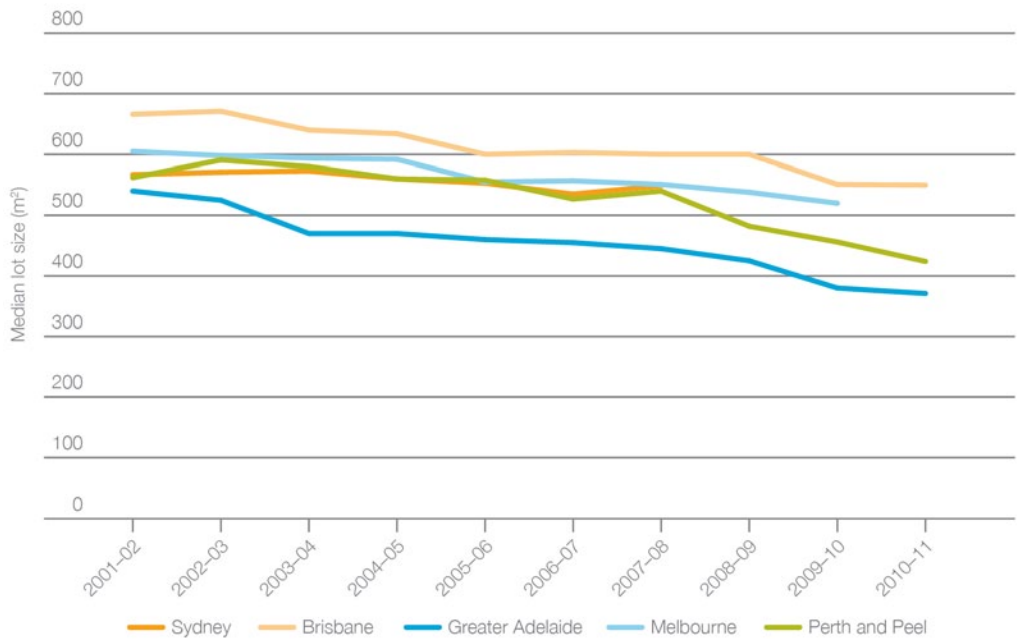


Source: UDIA 2012

Lot production varied between and within individual cities over the last decade (Figure 2-38). Where data is available, Sydney's lot production appears to be notably lower than the other capitals and has been declining.

Lot size and land costs

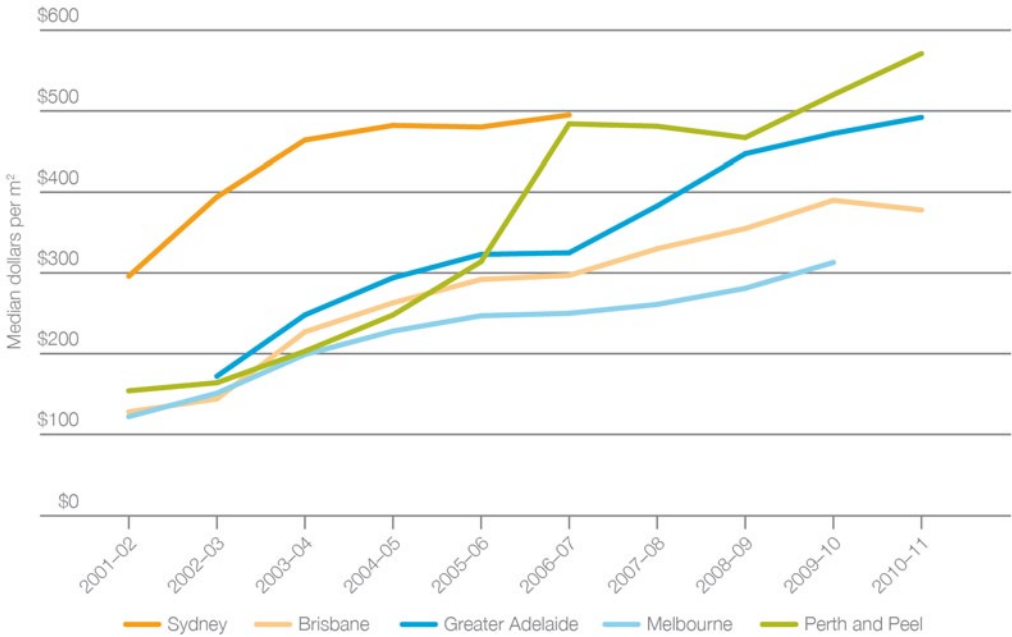
Figure 2-39 Capital city housing median lot size 2001–11



Source: UDIA 2012

Median lot size has been steadily decreasing over the past decade (Figure 2-39). Simultaneously, Australia has been building large houses (see Figure 2-35), so the current trend in Australian major cities appears to be to build large homes on increasingly smaller blocks. However, Darwin is an exception to this trend because its planning regulations require detached houses in certain residential zones to be built on a block size of at least 800 square metres, considered the minimum for tropical living (Northern Territory Department of Lands, Planning and the Environment 2012).

Figure 2-40 Capital city housing lot median dollars per square metre 2001–11

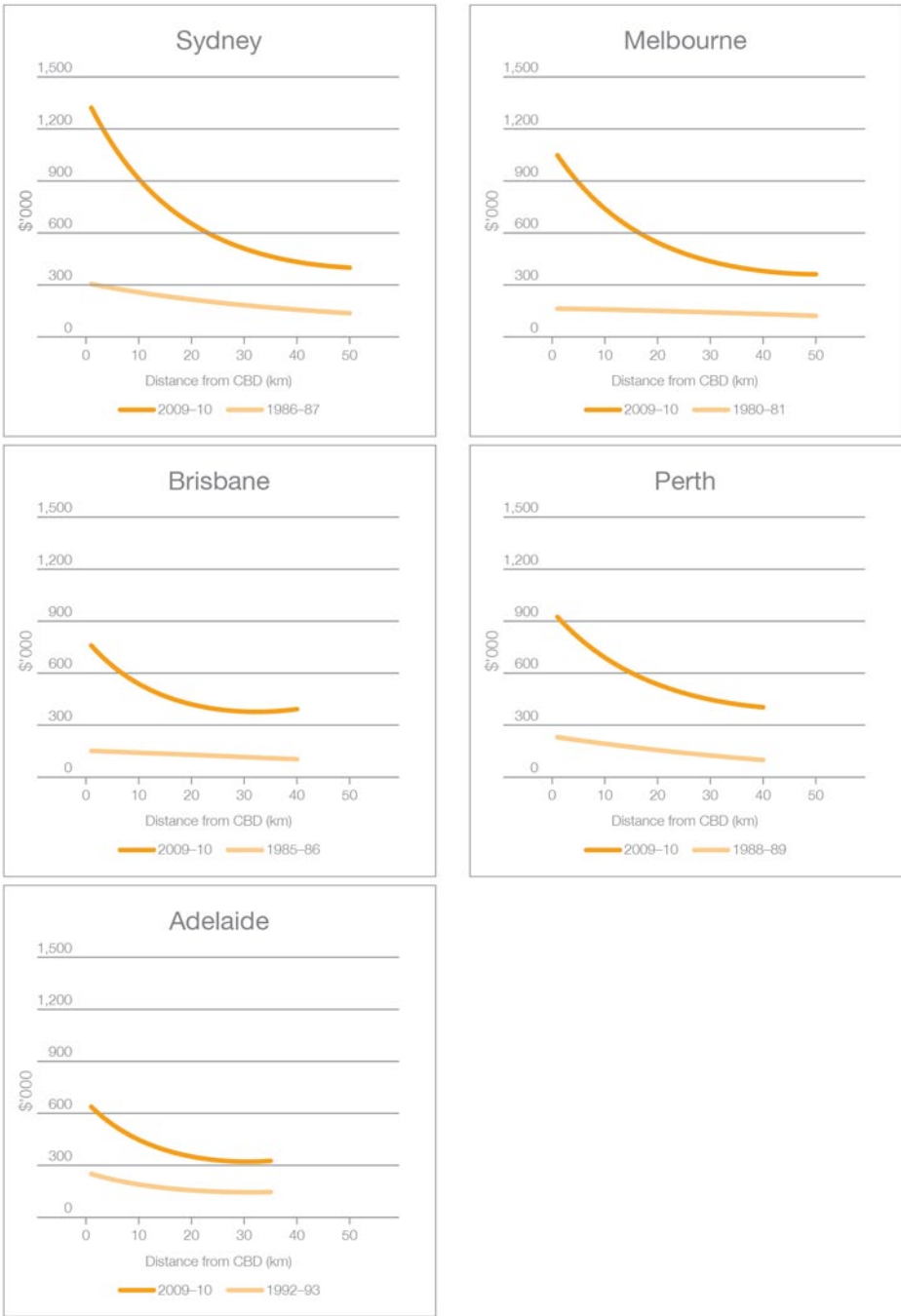


Source: UDIA 2012

As lot sizes have decreased over the past decade, land prices per square metre have risen sharply (Figure 2-40). In all cities, decreasing block sizes, flat average lot production rates, infrastructure expectations and population growth creating high demand are all likely to have contributed to this rise in the cost of new blocks. This in turn contributes to rising house prices.

Proximity to a CBD

Figure 2-41 Real house prices by distance from CBD in 2009–10 dollars



Source: Richards, A 2011, reworking data from Kulish, Richards and Gillitzer 2011, published in Yates 2011

House prices in the last two decades have been escalating with increased proximity to a CBD (Figure 2-41). Reasons for this may partly relate to the changing industrial structure of cities, which will be explored in Chapter 3 on Productivity.

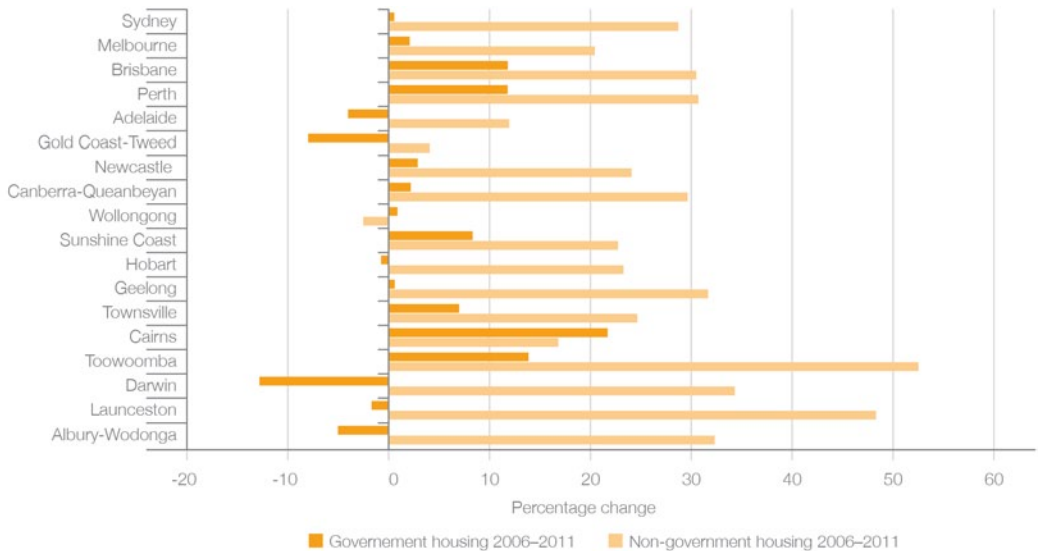


## Social housing provision

Social housing in Australia is comprised of government housing, provided by state or territory housing authorities, and non-government social housing, which is provided by housing co-operatives, community housing and church groups. Tenants of social housing in Australia have the lowest wealth and income in Australian society (Australian Government 2008) and potential tenants are significantly impacted on by the level of affordable dwelling supply.

Between 2006 and 2011, total government housing stock in major cities grew from 233,065 to 238,594 dwellings (2.4 per cent) (ABS 2007a, 2012b). Of the additional 5,529 government housing dwellings, around 4,750 were supplied in capital cities and over 750 in regional major cities. By contrast, non-government social housing grew by nearly 23 per cent over the same period, from 27,474 to 33,883 dwellings (ABS 2007a, 2012b). Of the additional 6,409 non-government social housing dwellings, over 5,500 were supplied in capital cities and around 800 in regional major cities.

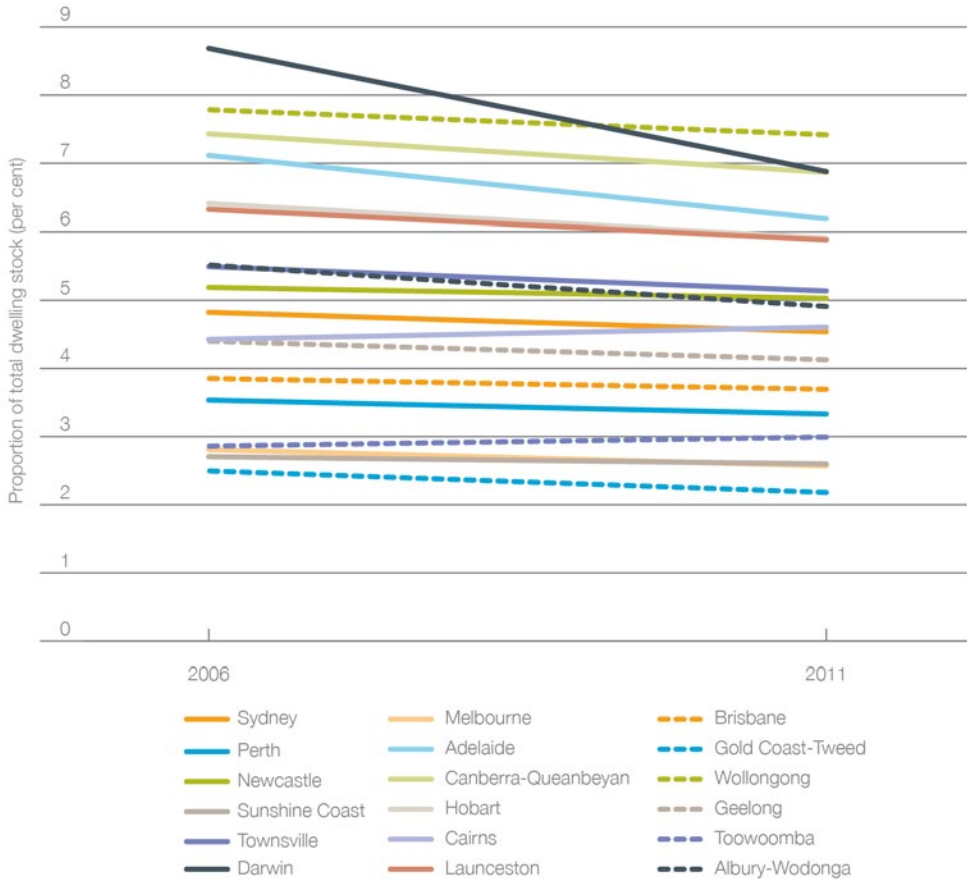
Figure 2-42 Change in social housing stock 2006–11



Source: ABS 2007a, 2012b

Figure 2-42 illustrates that several individual major cities experienced a net decline in government housing stock from 2006 to 2011. Wollongong was the only city to experience a loss of non-government social housing. In Gold Coast-Tweed, Darwin and Albury-Wodonga, declines in government housing stock were greater than growth in non-government social housing. Consequently, these cities all experienced net losses in total combined social housing stock, most notably in Darwin and Gold Coast-Tweed.

Figure 2-43      Government housing as a proportion of total dwelling stock 2006–11



Source: ABS, 2007a, 2012b

Government housing declined as a proportion of total housing stock in nearly every Australian major city between 2006 and 2011 (Figure 2-43). As a proportion of total major city dwelling stock, government housing decreased from 4.3 to four per cent while non-government social housing grew from 0.51 per cent to 0.57 per cent over the period.

Government housing stock is a declining proportion of overall major city dwelling stocks. It is also in turn not keeping pace with population growth, especially in cities such as Sydney and Darwin. This notable decline per capita in government housing stock is likely to continue to place additional pressure on the lower end of major city rental markets and other forms of affordable housing.

# Rent

## Historical trend

Figure 2-44 Real gross rental income per dwelling 1880–2012



Source: Stapledon 2012

Although rental income (Figure 2-44) broadly follows housing prices shown earlier (see Figure 2-32), there are some notable differences. In particular, rental income appears to be more sensitive to population pressures than house prices. In both the 1890 and 1930 Depressions and the World Wars many cities experienced either stagnating or in some cases falling populations and rental prices fell. In 1942, the Commonwealth and the state governments instituted price controls on rents, which in some cases were not fully lifted until the 1970s. Gross rental incomes have increased markedly since the 1960s through numerous housing cycles. Since the 1996 housing boom, rental income per dwelling appears to have been increasing even more sharply than before the 1990s recession.

Rental supply and demand

Figure 2-45 Capital city vacancy rates 2005–12

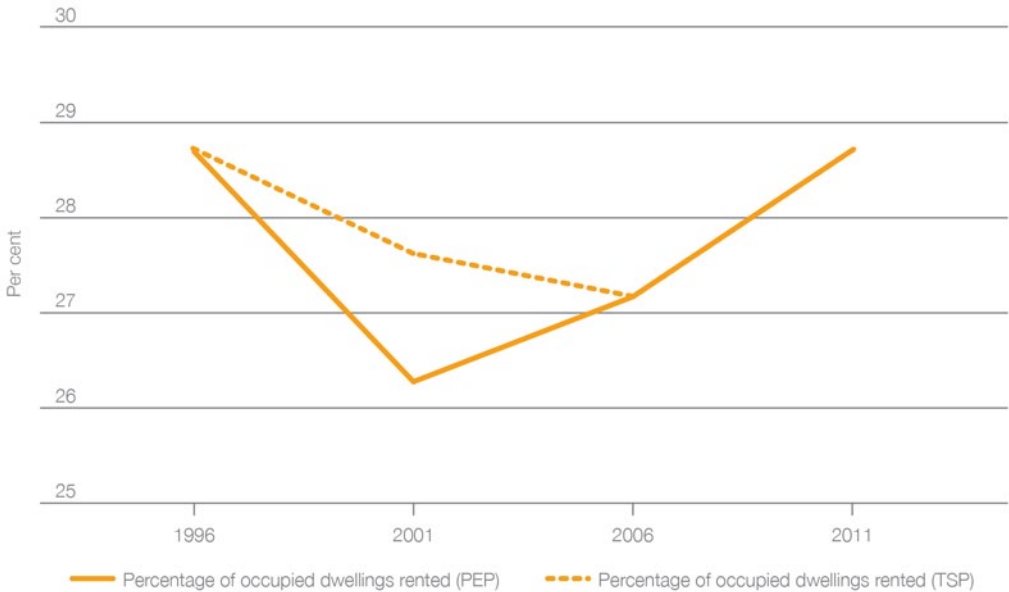


Source: SQM research

Capital city rental vacancy has been low overall since 2005 (Figure 2-45). With the exception of Melbourne, vacancy has generally been less than three per cent, often by a significant margin in cities such as Canberra, Perth and Darwin.

These low vacancy rates suggest that the underlying demand for rental properties is significantly greater than supply.

Figure 2-46 Proportion of occupied dwellings rented 1996–2011



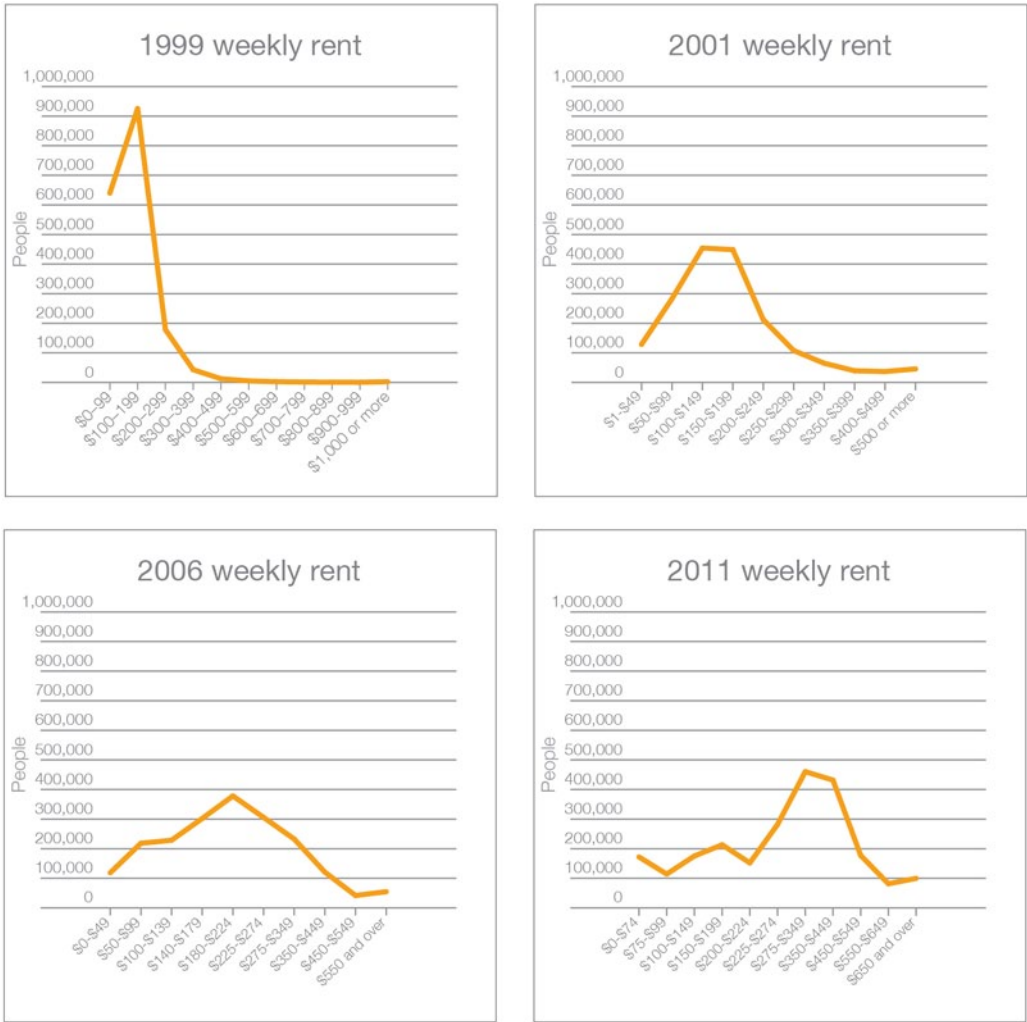
Source: ABS 2000, 2002, 2007b, 2007c, 2012e, 2012f

Figure 2-46 illustrates the proportion of occupied dwellings which are rented. There are small difference between Place of Enumeration (PEP) data and Time Series Profile (TSP) data and both are shown here for completeness. The discussion below relates to the PEP data.

For the past decade, the proportion of rented dwellings has been increasing. Although rental properties decreased proportionally during the start of the 1996 housing boom, this reduction has reversed since 2001. Significantly, rented dwellings here include government and non-government social housing, which declined proportionally from 2006 to 2011 (see Figure 2-43). Therefore rented dwellings, excluding social housing, must have experienced an even sharper rate of proportional increase in rents.

Distribution of weekly rent

Figure 2-47 National distribution of weekly rent 1996–2011



Source: ABS 2000, 2002, 2007b, 2012e

Overall, demand for rental properties appears to remain high and there are some key trends. Rental income per property has recently risen acutely and rental vacancy has generally been low since 2005. The number of rented dwellings has increased proportionally since 2001. The distribution of rent since 1996 has shifted towards more expensive properties. Over the same period land and dwelling supplies have been declining per capita, house purchase prices have increased markedly and social housing has decreased as a proportion of total dwelling stock, all of which may be contributing to demand for rental properties.

## Conclusion

The current gap between housing supply and the population increase we are experiencing is the largest and most sustained in a century and this is the only significant period of undersupply relative to population growth that has occurred outside the Depressions or World Wars since at least 1860.

Since 1996, we have seen the most acute and sustained increases in house prices in at least 130 years, although there has been some moderation since the Global Financial Crisis. Outright home ownership has decreased from 60 to 46 per cent, between 1996 and 2011.

Rising house prices appear to be closely related to rising land prices, driven by declining lot production per capita, falling lot sizes and sharply rising costs per square metre. Also associated with price rises is an increasing premium for living near city centres. Dwelling construction costs is not the largest contributor to price increases.

In response to the gap between population growth and housing supply since the mid-2000s, occupancy rates have stopped falling and have begun to rise again, mainly in households comprising families with children. With government housing having declined proportionally, demand for rental properties remains high. Rental income has continued to increase, weekly rents have redistributed towards higher prices and rental vacancy rates have remained low across all capitals.

*Housing development, City of Whittlesea, Melbourne.*





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# Productivity

## Chapter 3

Discussion about economic growth in Australia is usually framed in terms of the 'Three Ps': Population, Productivity and Participation. This framework is also used in the *State of Australian Cities* reports. The previous chapter discussed one of the Ps – Population. It focused on two critical factors: the rate of population increase and the age structure of the population which is associated with participation. In this chapter, Productivity and the other leg of the Three Ps – Participation – will be discussed.

The main theme of the Productivity section of this chapter is that the social and economic geography of Australia's major cities is undergoing some of the most fundamental changes since the end of World War II. The key driver of this is the concentration of high-growth industries in city centres. This is reversing the dispersal forces that drove the outward spread of cities for 60 years. Business growth in the largest cities in particular is increasingly being concentrated in CBDs and large centres. This is changing the transport task and the chapter outlines this in the context of a century of change in urban transport.

This year, the first feature article looks at the role of that often-forgotten transport mode, motorcycles and scooters. The second of the feature articles in the Productivity chapter looks at the basis on which most of the older major cities were founded: their ports. It shows how ports are adapting to the growth in freight and the challenges they face as space and transport constraints exert pressure. The third feature article looks at the importance of airports to cities and implications for future growth.

The workforce participation section develops some of the themes touched on in *State of Australian Cities 2011*. Women's participation in the workforce in major cities is examined in greater detail, as are the changing patterns of workforce participation through the age cohorts. The workforce participation pattern between cities is significant and raises issues not just with the amount of workforce participation but where it is occurring.

## Summary indicators

Dimension	Indicators
Productivity	Australia's multifactor productivity growth 1974–2011 Australia's labour productivity growth 1974–2011
Transaction costs – transport	Australia's modal shares for urban passenger transport 1900–2011 Australia's total metropolitan passenger transport task across all modes 1900–2011 Australia's urban passenger transport consumption per capita (for Australian capital cities) 1965–2011 Median peak travel time for commuters Amount of freight transported per person 1945–2011
Participation	Labour force participation rates for major cities 1988–2012 Labour force participation rates by gender for major cities 2000–12 Labour force participation rates by age and gender for major cities 2000–12

## Key findings

- Australian national productivity growth levels continue to be lower than previous years.
- Most of the industry sectors that are experiencing rapid growth as a proportion of the economy are located in city centres and rely on increasing job densities to drive their productivity.
- This suggests that, measured in terms of the value of economic activity, cities may be beginning to shrink in on themselves, reversing the dispersing forces that have been dominant since the end of World War II.
- After reaching a peak in 2005, per capita urban passenger transport (the number of kilometres travelled per person) has declined more steeply and for a longer period than since the Great Depression.
- The decline has been led by a reduction in car travel offset by some increase in heavy rail.
- In contrast, the per capita freight task is increasing substantially and is likely to become the major driver of the urban transport systems.
- Morning travel peak has increased and sharpened in the last 30 years, greatly increasing the pressure on transport networks. This appears to be driven in part by an increase in discretionary travel in the morning peak period.
- Fare recovery in Australian urban mass transit systems is already well below international best practice and continues to decline. This raises questions about the sustainability of their current financial structures and the scope for further investment in mass transport infrastructure and services.
- The sea ports of coastal major cities, particularly Sydney and Melbourne, are experiencing a significant increase in container volumes. More than 80 per cent of containers will be discharged and loaded within the urban boundary.
- There are significant differences in labour force participation between major cities. In Canberra 72 per cent of the working age population is in the workforce while in Wollongong 57 per cent is in the workforce.

- Female participation in the paid workforce has increased by nearly 10 per cent since 1988. The increase is across the age cohorts.
- Female human capital is increasing at a faster rate than that of males, indicating that not only are there more women in the workforce but their potential individual productivity is increasing.
- Australia is following the trends of other advanced economies in that a growing proportion of older people are working past the traditional retirement age.



*Perth skyline twilight, City of Perth, 2012.*

## Introduction

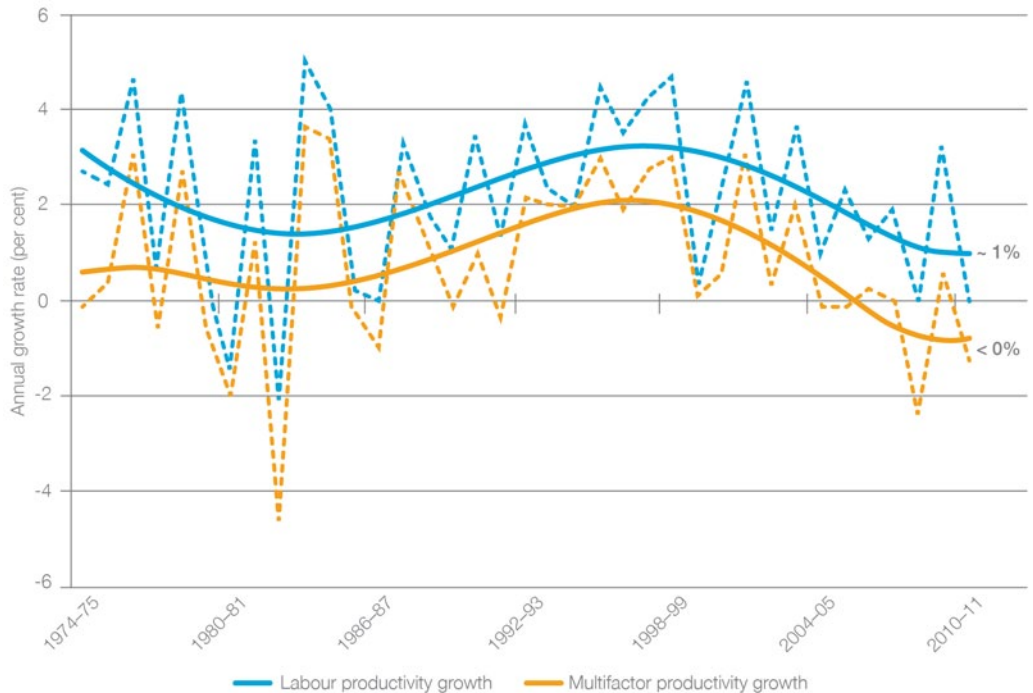
This section begins with a discussion about the current period of falling or static productivity growth in Australia and outlines possible causes. We then look at what drives the productivity growth of cities. This discussion develops a theme from last year's report – the changing industrial structure of cities and in particular the growing concentration of jobs and economic value in the finance and transaction sectors which tend to be located in capital city centres. It then looks at the future transport needs of this changing industrial structure – in particular, the challenges of carrying large numbers of workers to a relatively small area within an acceptable total travel time. It concludes that high capacity mass transit will become critical to urban productivity growth. The 'productivity' section of this chapter finishes with a review of the financial structures of urban mass transit systems.



# The national context

*State of Australian Cities 2011* discussed the plateauing and fall in multi-factor productivity (the efficiency with which labour and capital are combined to produce goods and services). Figure 3-1 shows that this trend is continuing and Australia has entered into the longest period of static or falling productivity growth for more than 30 years. Since four-fifths of the economic growth occurs in major cities, they both affect and are affected by changes in productivity rates.

Figure 3-1      Multi-factor and labour productivity growth in Australia 1974–75 to 2010–11



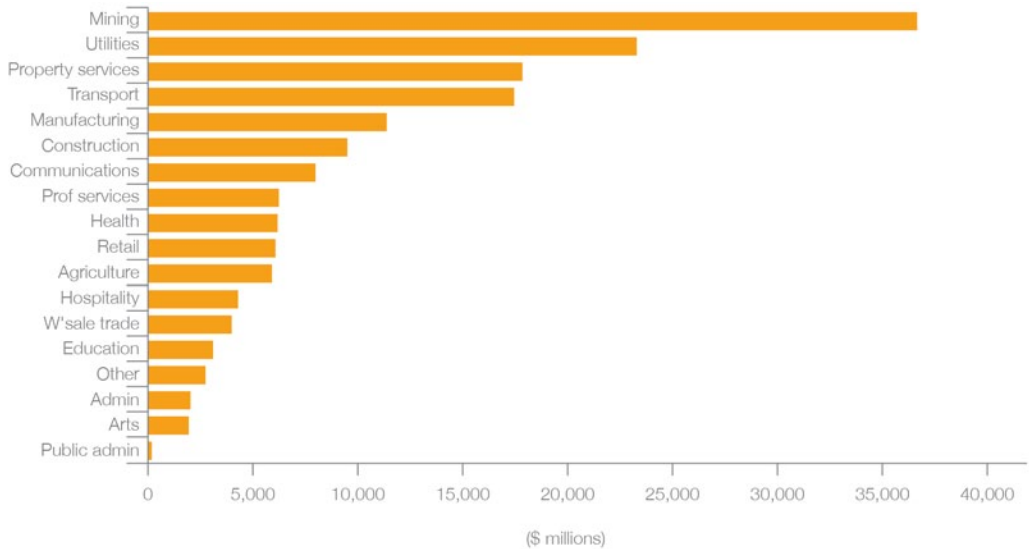
Source: From Lattimore 2012, reproduced with kind permission of the author

Attempting to summarise and explain Australian productivity is an exceptionally complex task. However, two themes are apparent.



The first is the seeming paradox of productivity – more investment can lead to falling levels of productivity in the short to medium term due to the time lag in reaping the productivity rewards flowing from that investment. Figure 3-2 shows that there are large differences between investment levels in Australian industry sectors.

**Figure 3-2** Gross fixed private capital investment by industry division 2009–10



Source: ABS 2011a

Viewed through this prism, a large part of the national productivity decline has been caused by high levels of investment in the mining and to a lesser extent the utilities sectors (Electricity, gas, water and waste services) causing a slump in the productivity of these industry groups (Productivity Commission 2010 Lowe 2012).

The second prevailing theme on the decline in Australia's productivity is whether the slowdown in productivity growth is largely due to the exhaustion of the micro-economic reforms in Australia in the 1980s and 1990s and the lack of productivity-enhancing reforms since then (Garnaut 2005).

In a comprehensive sectoral analysis, Eslake and Walsh (2011) conclude that the productivity decline in Australia is broad based, with only three industry sectors (Construction, Administration and Cultural Services) showing a consistent increase in productivity over the last decade.

They also compare Australia's labour productivity with that of the United States and find that after reaching 92 per cent in 1998 it has declined steadily to 84 per cent and is now at the lowest level since 1974. Eslake and Walsh also show that both labour and multi-factor productivity relative to the OECD average have fallen in the first decade of the century, although the recent improvements give some hope that this may have ceased (Figure 3-3).

Figure 3-3      Australian labour and multi-factor productivity relative to the OECD average



Source: Redrawn from Eslake and Walsh 2011 with kind permission from the Grattan Institute

The McKinsey Global Institute has analysed growth in the Australian economy since 1993 and reaches similar conclusions to Eslake and Walsh (Taylor et al. 2012). It found that growth in terms of trade (103 per cent), investment (85 per cent) and workforce expansion (two per cent) was being offset by declines in capital productivity (68 per cent) and labour productivity (40 per cent).

In a recent analysis by the Productivity Commission, Parnham (2012) concludes that inputs across many industries had risen faster than outputs and that manufacturing, agriculture (drought) and, to a lesser extent, transport and logistics are also significant contributors to national decline. Barnes (2011) argues for a more sectoral-specific understanding of productivity, believing that aggregated figures could disguise quite different forces acting on different industries.

A greater understanding of the productivity puzzle is hampered by the fact that it is difficult to look over time in any level of detail. This is largely due to the regular changes in the ABS's Australian New Zealand Standard Industrial Classification (ANZSIC) to accommodate new industries and the loss of old ones. There is also little published work on the relationship between industries, such as the relationship between the mining and construction industries. Nevertheless, there is general agreement that productivity in Australia has plateaued and declined. There is also a consensus that the decline is broad based, even if the reasons for this and the appropriate policy prescriptions are still disputed.

The next section examines how a better understanding of the economic geography of Australian cities might help us to increase their productivity.

## The production geography of Australian cities

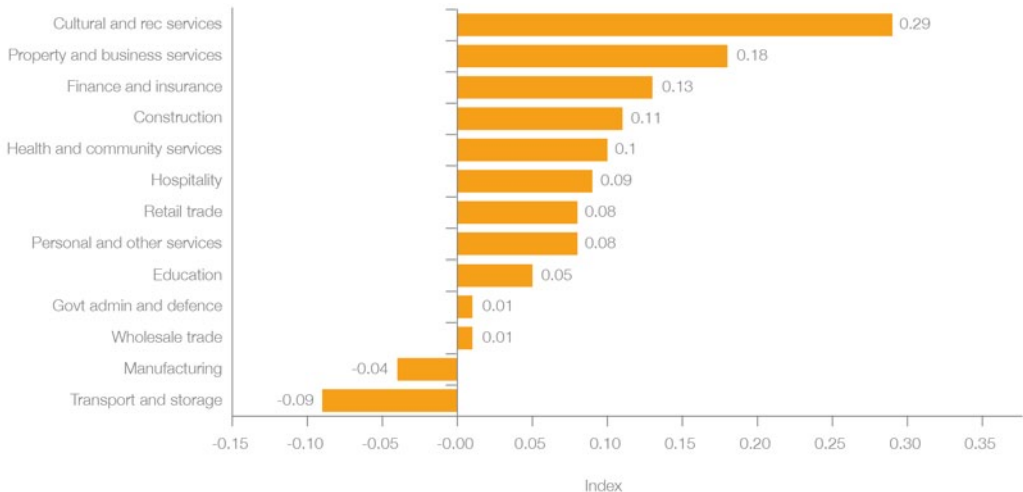
*State of Australian Cities 2011* explored the concept of agglomeration as an economic driver. Agglomeration is the geographic concentration of industries in locations near their customers and a workforce that allows a greater division of labour. Cities by their nature provide the greatest agglomeration opportunities. A concentration of firms also encourages knowledge transfers and spillovers, helping businesses to be adaptive and innovative. Whilst agglomeration often refers to a concentration of labour in city centres, it is also evident in many regional centres such as Dubbo in NSW which draws industry and population from almost one third of the State.

The role of agglomeration in improving labour productivity is receiving increasing attention from urban researchers. Reports that have looked across capital cities include a major report to the COAG Reform Council by SGS Economic and Planning (COAG Reform Council 2012) and work by Trubka using small area units (2011). More city-specific studies include those by Hensher et al. 2012, Daniels and Mulley 2011 and Longworth 2008.

Initially, it was thought that population size was the main driver of agglomeration benefits. Now it is believed that it is employment concentration that drives increased labour productivity from agglomeration.

Studies show a remarkable consistency in estimates of agglomeration benefits in developed economies. Taken as a whole, for every doubling of job concentration there is a five to 13 per cent increase in labour productivity (Melo et al. 2009). Australian cities are generally at the midpoint in this range (Hensher et al. 2012, Rawnsley and Szafraneic 2010, Trubka 2011).

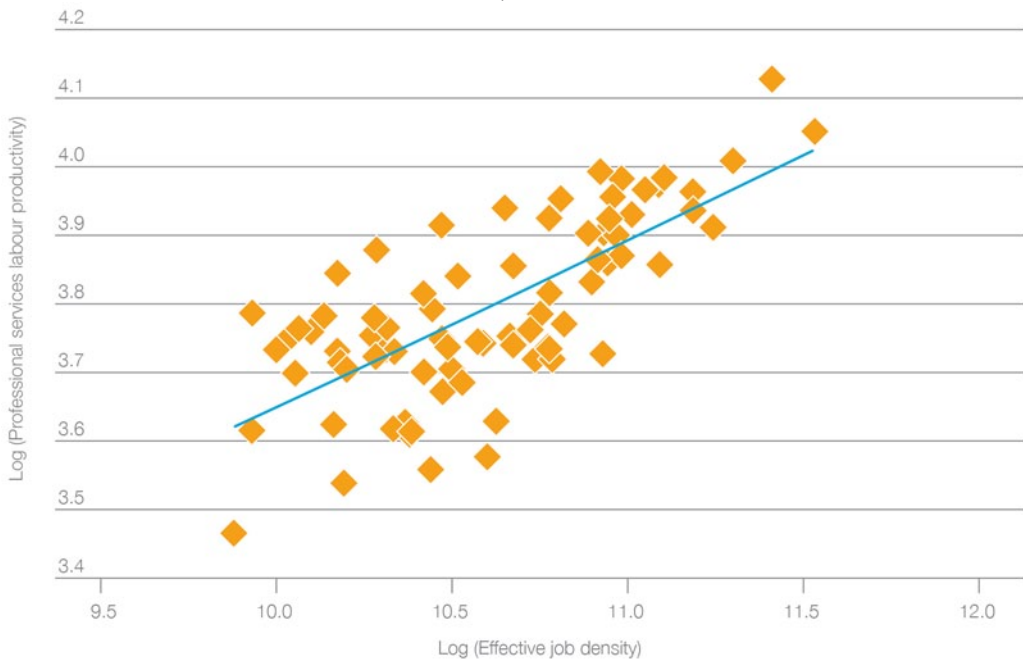
**Figure 3-4 Agglomeration benefits by industry division for Melbourne 2007–08**



Source: From Rawnsley and Szafraneic 2010

Not all industries benefit from agglomeration. Figure 3-4 shows the situation for Melbourne, and studies by Hensher et al. (2012) and Daniels and Mulley (2011) indicate a similar ranking for Sydney. The average manufacturing or transport firm derives little or no benefit from greater job density. Professional services such as finance, accounting and advertising gain significantly, while arts, media and entertainment benefit most of all. An analysis by the Australian Government Department of Infrastructure and Transport used a different statistical process (fuzzy clustering) that allowed it to look at the agglomeration process in much more detail. At this level, the basic structure shown in Figure 3-4 was confirmed but there were significant variations within Industry Divisions. For example, some types of manufacturing industries such as fine furniture benefit from agglomeration, while steel making does not. Within retailing generally, the higher the value of the good, the more firms benefit from agglomeration. This explains why car retailers cluster together in almost all cities. These examples show how complex the agglomeration process is.

**Figure 3-5** Effect of job density on labour productivity of the property and business services sectors, Melbourne 2007–08

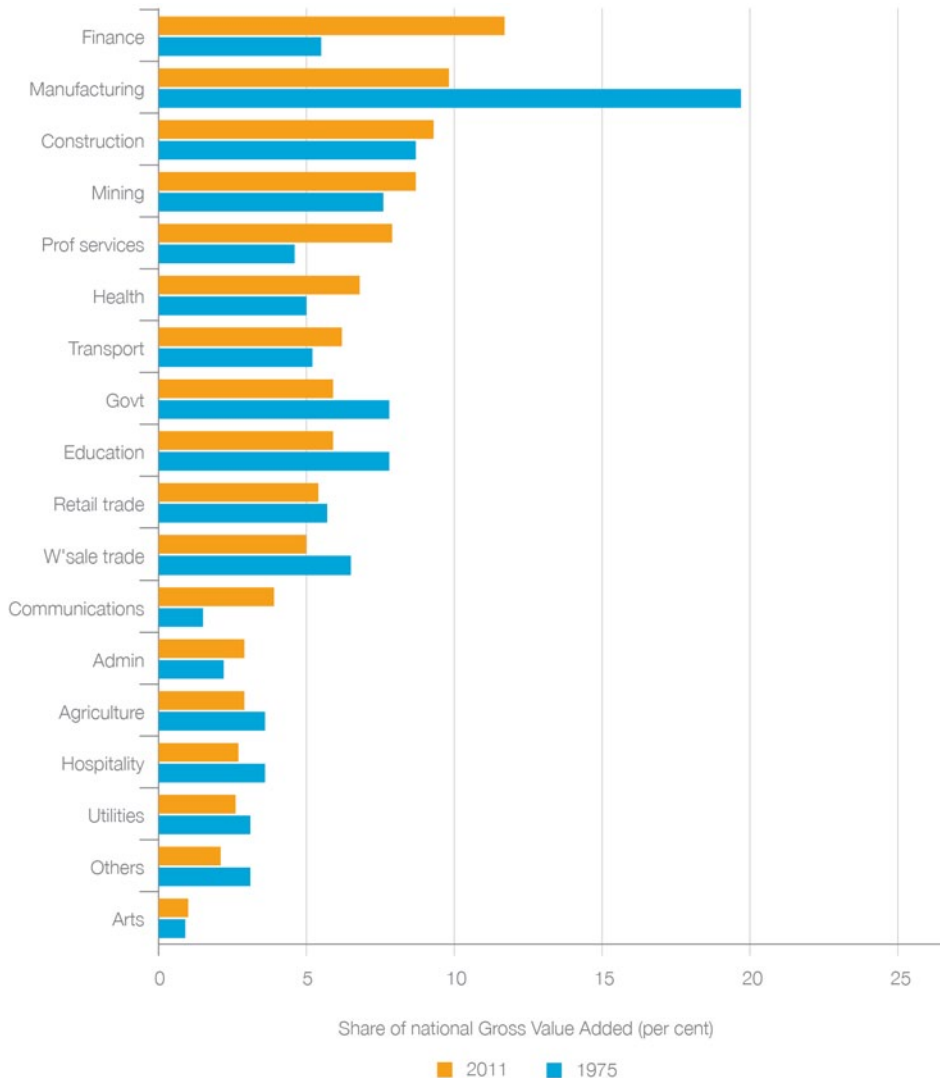


Source: From Rawnsley and Szafaneic 2010

Figure 3-4 showed the significant agglomeration benefits to the ‘transaction’ industries which refer to industries such as finance, insurance broking houses and law. This is further illustrated by the example of the property and business sectors in Figure 3-5. The concept of transaction industries is that as the economy improves its productivity by increasing the division of labour (labour specialisation) then the structure of the economy becomes more complex. Transaction industries help people navigate the complexity. For example, if a business owner was seeking to raise capital, they may find it more cost effective to use a merchant bank that has amalgamated capital from a variety of sources rather than going to each capital provider themselves, in the same way that a home buyer might use a mortgage broker. Thus, transaction industries help the whole economy to grow by allowing a further division of labour and providing the ‘oil’ to lower the internal friction in the economy.

A further discussion of the Australian context can be found in O'Malley (2007). When the ABS updated its 1993 Australian New Zealand Standard Industrial Classification in 2006, it expanded it by nearly 25 per cent. That is, the number of industries in Australia and New Zealand expanded by nearly one-quarter in 13 years. Most of this was in the transaction industry sector, indicating that this is where the greatest division of labour is taking place.

**Figure 3-6 Industry Division shares of national Gross Value Added 1975 and 2011**

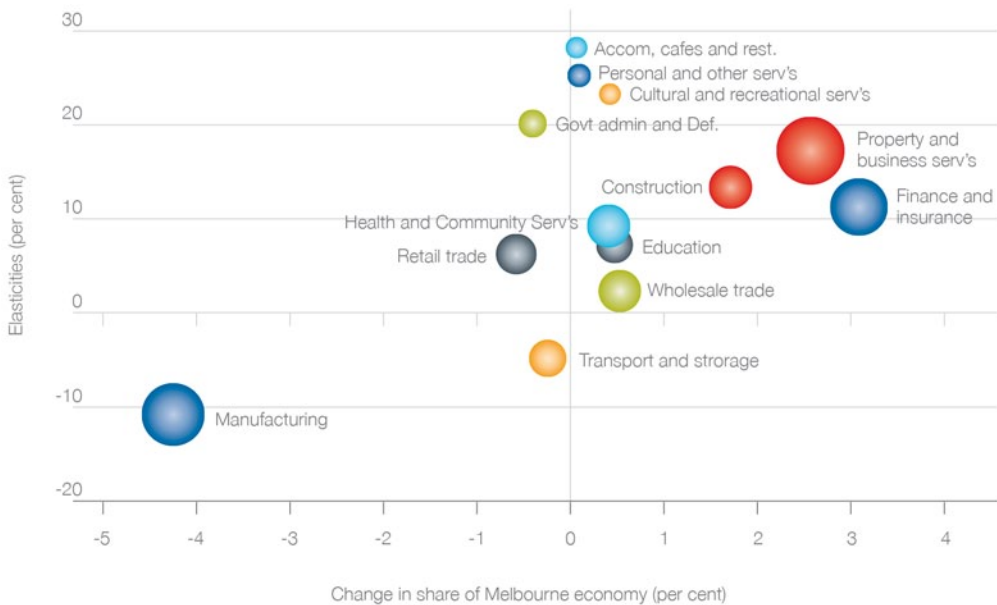


Note: Gross Value Added is the economic value of the good and services in an industry or area.

Source: ABS 2011b

Figure 3-6 shows that there have been major changes in industry mix in Australia over the last 37 years. Most noteworthy is a halving of manufacturing from 20 per cent to 10 per cent and the rise in transaction industries as a proportion of the Gross Value Added of the economy. This continues a trend that has been in place since 1960, when both agriculture and mining peaked at around 30 per cent of the economy while 'Finance, distribution and other services' were about 25 per cent (ABS 2005).

Figure 3-7 Agglomeration activities versus industry size and growth 2000–10



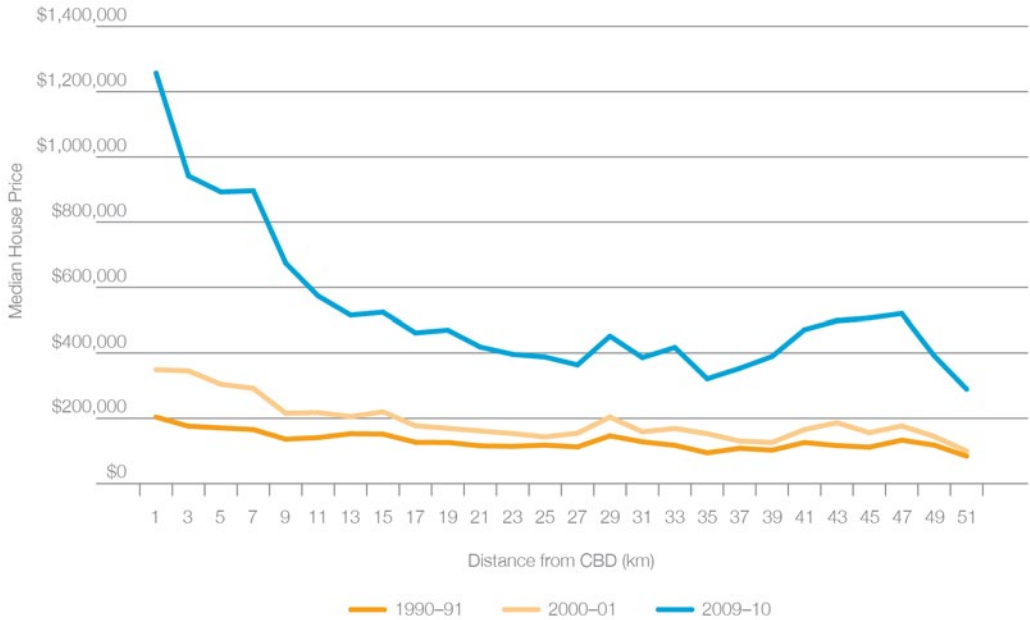
Source: Spiller 2012

SGS Economics and Planning has examined this process in Melbourne. Figure 3-7 shows the size of industries as represented by the size of the spheres. Those on the right of the plot are growing as a share of the economy while those to the left are declining. The higher an industry is on the plot, the more it gains from agglomeration. Those below the line are negatively affected by increasing job density. The plot shows that those industries that are growing as a proportion of the economy are also those that rely on higher job densities to increase their productivity. In other words the economic centre of gravity is moving to city centres where employment concentration is high.

*Melbourne CBD construction.*

Image courtesy of Chay Garde



**Figure 3-8** House price gradients in Melbourne 1990–91 to 2009–10

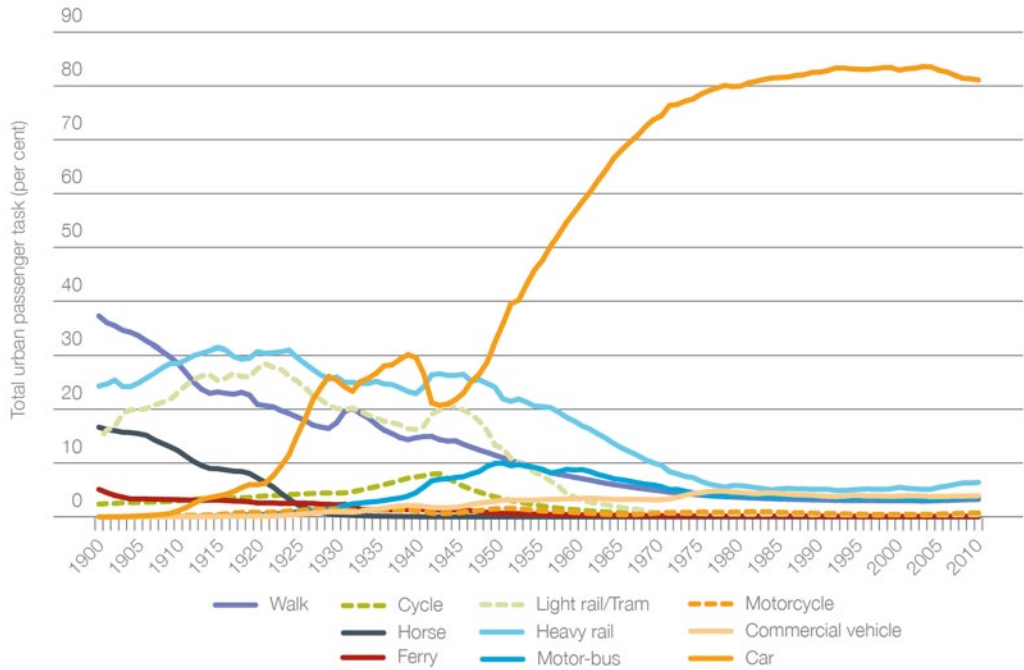
Source: From Rawnsley 2011

Analysis by the Australian Government Department of Infrastructure and Transport shows that the concentration of high Gross Value Added transaction industries in the centres of large cities has been the largest change in Australia's industrial geography in the last two decades. This finding is reinforced in Figure 3-8 which shows that in the last 20 years there has been a more than six-fold increase in the cost of dwellings near the CBD as compared to the outer suburbs where real prices have only doubled. As shown in Figure 2-41 in the previous chapter, this trend is common across the capital cities.

# Transport

## Urban transport in Australia 1900–2011

Figure 3-9      Modal shares for urban passenger transport 1900–2011

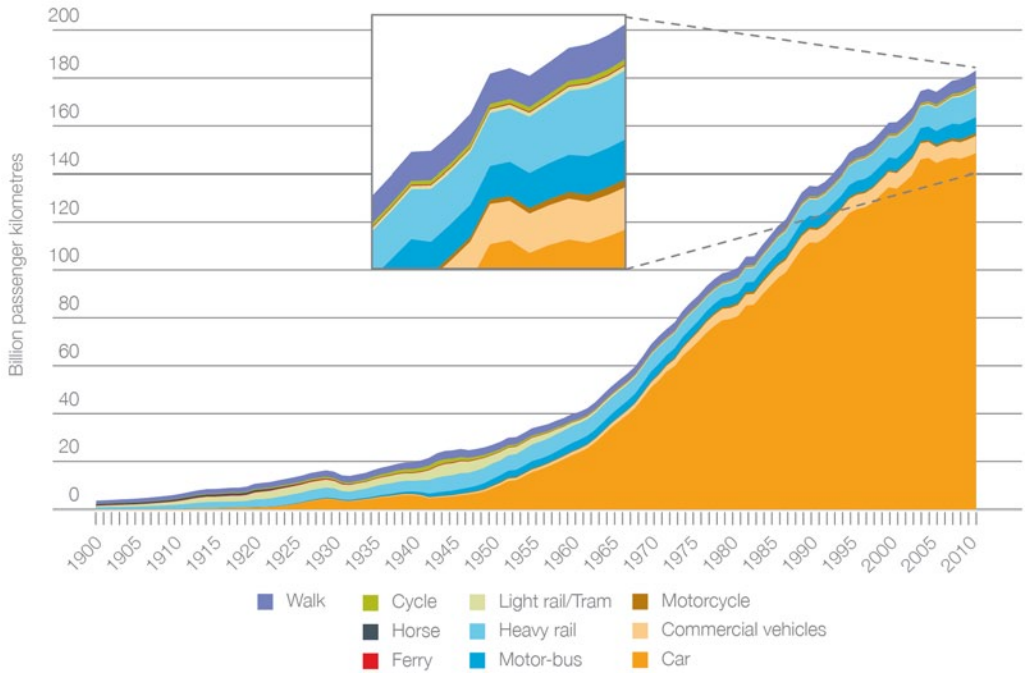


Source: Updated from Cosgrove 2011

The most obvious feature of Figure 3-9 is the very rapid increase in cars' share of the total transport task after World War II, peaking at almost 86 per cent in 2004 before declining to 81 per cent in 2011. Walking as a share of the transport task has declined at a consistent rate since Federation, although the temporary increase during the Depression is noteworthy. Light rail's (trams) peak was in the mid-1920s, with a relatively consistent decline since then only broken by wartime fuel rationing. Of interest is that the rise of buses and the decline of light rail are contemporaneous, suggesting that it was not only cars that were responsible for their decreasing patronage. Also contributing to the decline were government policies after World War II which favoured modern, clean and comfortable buses over what were then seen as rickety and dirty trams that often offered little weather protection to passengers, such as Sydney's infamous 'toast racks'. After peaking in the 1950s, bus's share of the transport task also declined before rising slightly in the last decade. Heavy rail's proportion of the urban transport task declined steeply after World War II before levelling off in the 1980s but is now growing again as the use of the car declines.



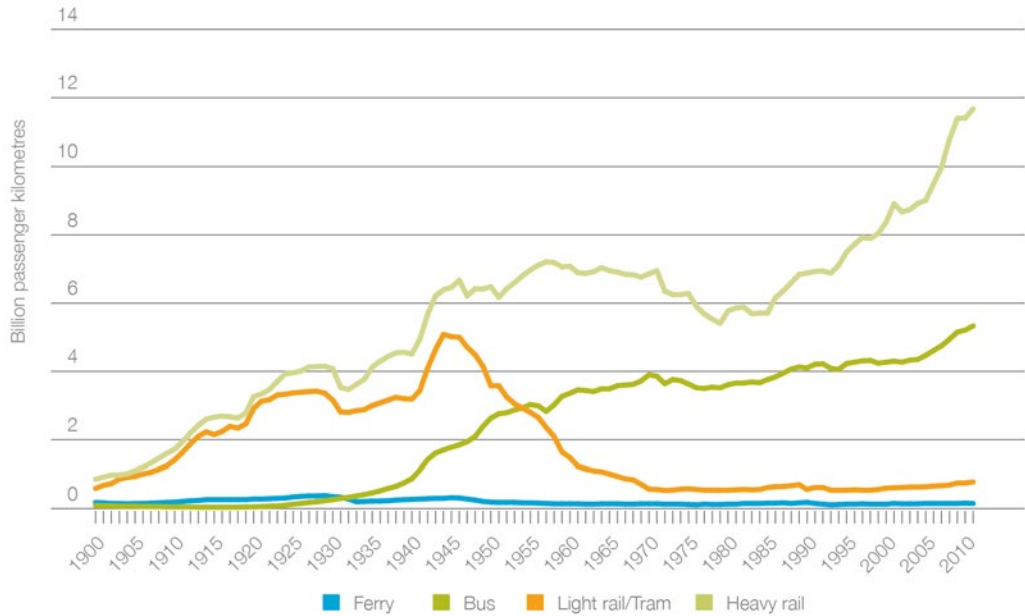
Figure 3-10 Total metropolitan passenger task across all modes 1900–2011



Source: Updated from Cosgrove 2011

When urban travel is expressed in billions of passenger kilometres (Figure 3-10), the sheer scale of the growth in the urban transport task is apparent. What is also clear is the dominance of the car over the second half of the 20th century. Also evident is the increase in light commercial vehicle use as the service economy expanded.

Figure 3-11      Total metropolitan passenger task performed by Australian mass transit modes 1900–2011



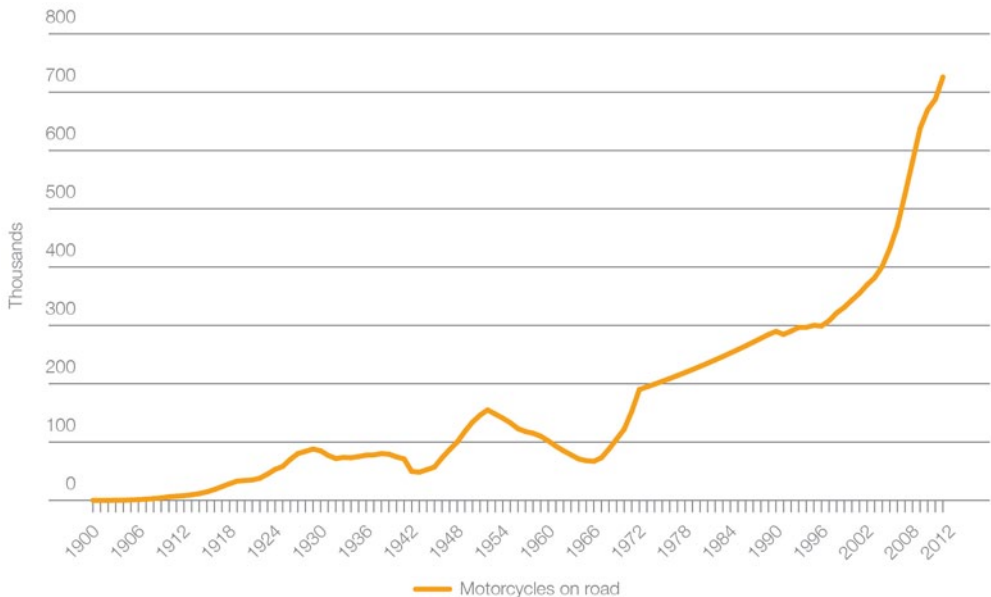
Source: Updated from Cosgrove 2011

If the mass transit patterns are examined more closely (Figure 3-11) then its decline measured in billion passenger kilometres between the end of World War II and 1980 is evident across all modes except for buses. Since then, mass transit has resumed an upward trajectory, with steady growth in heavy rail and to a lesser extent buses. However, despite this rise, the number of per capita trips on ground-based mass transit systems has not changed much for more than 30 years. In 1980 it was 108 trips per capita; in 2012 it was 105 (BITRE data). In other words, the rise in mass transit kilometres has been primarily due to population growth rather than a significant shift in modal share, although in some cities (or parts of cities) patronage is now growing faster than the population (BITRE 2012f).

## Motorcycles and scooters

In many of the world's cities, the streets are thronged with motorbikes and scooters as people take advantage of this low-cost and space-efficient form of transport. In Australian transport policy, however, if they are mentioned at all it is usually in a discussion of safety. This can obscure the fact that they are an important and growing component of the urban transport system.

Figure 3-12 Motorcycles and scooters on the road 1900–2012 (projected)



Source: BITRE data

Figure 3-12 shows that the story of motorcycles and scooters has been one of fluctuating fortunes in Australia. From their beginning as essentially motorised bicycles at the start of the 20th century, motorcycles grew into a viable means of transport as engines, frames and (sometimes) suspension improved. For the first three decades of the century Australia had a thriving motorcycle industry using either local or imported components.

The growth was ended by the Depression which also meant the effective end of the local industry. Motorcycling grew strongly again after World War II as ex-military machines became readily available and cars were scarce and relatively expensive. This was also a period of technical innovation perhaps best exemplified by the Vincent HRD (partly designed by the Australian Phil Irving) which marked a watershed in design.

This renaissance was short-lived, however. Cars became more abundant and substantially cheaper in the 1950s which also coincided with the baby boom. It was also a period of relative technical stagnation in motorcycles although it did see the birth of the modern-day scooter in Italy.

Motorcycling's fortunes revived in the mid-1960s as the market was remade by cheap and reliable small Japanese motorcycles. The Honda Dream with the 'You meet the nicest people on a Honda' advertising campaign marked a clear change in perceptions of what motorcycling could be.

The industry was remade again with the advent of the Honda CB750 in 1969 – a machine so advanced it made all other large motorcycles obsolete at a stroke. This machine and its successors greatly widened the potential user base for motorcycles by offering inexpensive, reliable, clean and user-friendly machines for both the open road and city traffic.

In the last 10 years, motorcycles and scooters have undergone the greatest technological advances in their history. Engines are now vastly more reliable and efficient and motorcycles and scooters are possibly the most energy-efficient powered transport available. Emissions have also fallen as two stroke engines have declined to a minor portion of sales. Braking and handling improvements have greatly increased active safety, while technologies such as Anti-Lock Braking Systems (ABS), traction control, adaptive suspension and now airbag protection devices are spreading through the fleet. There has also been a flowering of different motorcycle types from the mega tourers that can weigh up to half a tonne fully loaded to small commuter bikes that weigh less than 100 kilograms.

Scooters have also undergone their own particular technological advances. While many such as Vespas can trace their roots back to post-war Italy, they have been joined by big-wheeled or maxi scooters and three-wheeled scooters that offer significant safety improvements in both steering and braking. They in turn are being joined by full-size electric scooters.

These advances have seen motorcycles and scooters become the fastest-growing segment of registered road vehicles (eight per cent growth per year for the last decade) with over 700,000 motorcycles and scooters on Australian roads today. A significant part of this growth has been in scooters. In the 1990s, there were fewer than 700 scooters sold a year in Australia. Now there are over 11,000 sold per year (Federal Chamber of Automotive Industries 2011). They currently represent 30 per cent of newly registered motorcycles and scooters and probably a higher proportion of those are used for transport rather than recreation (Victorian Government 2009).

The major advantage of motorcycles and scooters in the urban transport system is that they are very space efficient at a time when congestion is now a critical problem in cities. Depending on the attitude to filtering or lane splitting, they take up much less space than other vehicles in slow-moving or stationary traffic and up to five can park in a single car space. Consequently, cities in Australia are following their European counterparts in encouraging their use. In Melbourne, for example, motorcycles and scooters can park free on that city's wide footpaths, while in Canberra they can park free of charge in designated spaces that are plentiful throughout the city. The City of Sydney is implementing its *Motorcycle and Scooter Strategy and Action Plan and Strategy 2008–2012* which supports the provision of low-cost and secure motorcycle and scooter parking (City of Sydney 2008).

Improving motorcycle and scooter safety dominates discussion about the future growth of the mode. Great strides have been made in incorporating active safety into vehicle design. Passive safety has also been improved, in particular by better body armour and abrasion-resistant clothing coupled with an emphasis on rider training, nevertheless motorcycle and scooter riders are still an inherently vulnerable road user group. Many jurisdictions are now incorporating the needs of motorcycles and scooters into transport design through attention to marking paints, manhole covers and crash barrier specifications. If safety issues are addressed, the inherent advantages of motorcycles and scooters may see them become a steadily larger component of our transport system.



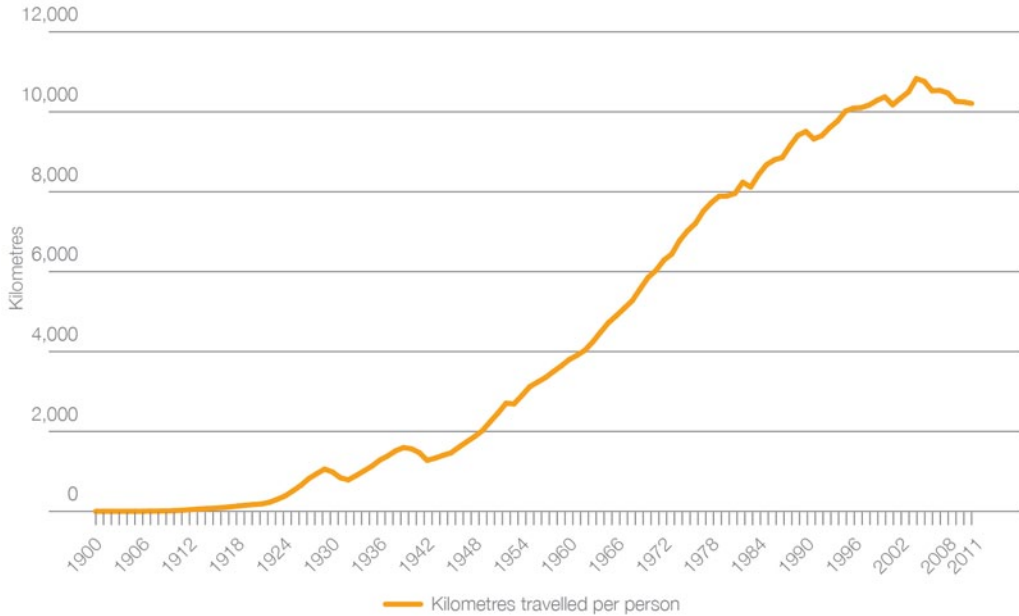
*Row of scooters.*

### The relation ship between income growth and transport

There is a complex range of interlinking factors that determine if and how a person travels and what mode they will use. Fuel prices, generational differences in travel behaviour, economic conditions, technological innovations such as teleworking and changing industry structure all play a part. This section will focus on one factor that may be dominant – income.

When income is low, consumption is low. As income starts to rise, consumption starts to rise with it. As income continues to increase, however, consumption begins to plateau and in some cases fall. In other words, consumption is said to be saturated. This is of profound importance to the future transport patterns in Australian cities. For more than 70 years, the total transport task has been a combination of rising population multiplied by increasing per capita transport consumption. If per capita transport consumption stabilised or fell then new future transport infrastructure provision would be due to population increases only.

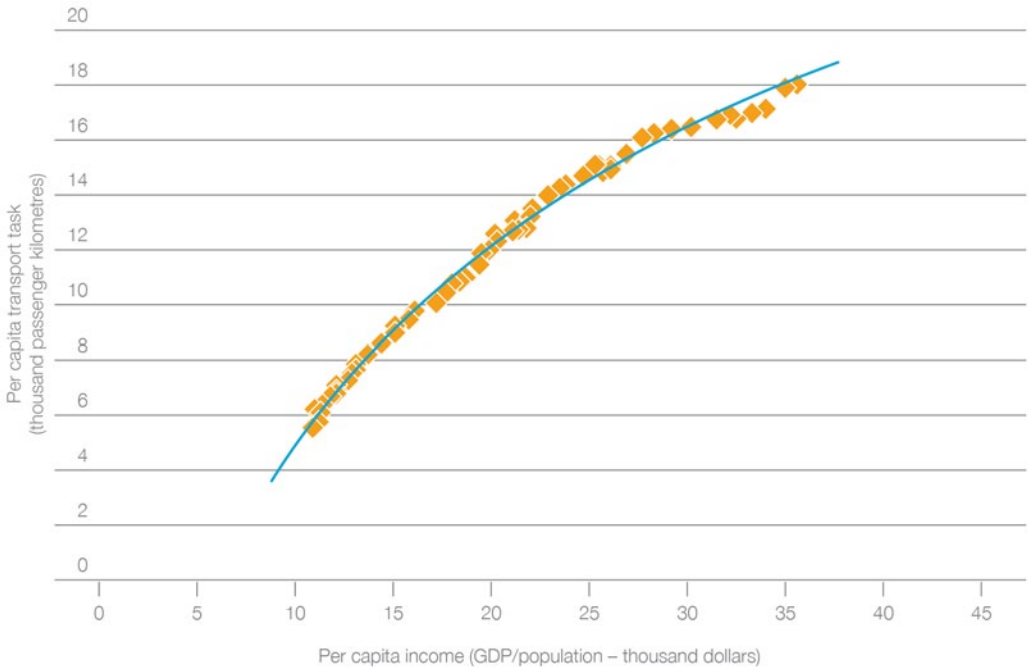
Figure 3-13      Total urban passenger transport consumption per person 1900–2011



Source: Updated from Cosgrove 2011

Figure 3-13 shows the total annual kilometres travelled per person in Australia since 1900. Travel consumption grew slowly in the first part of the 20th century punctuated by declines during the Great Depression and World War II. After the War, growth in travel increased markedly before beginning to plateau in the 1990 and peaking in 2005. Since then, there has been a decrease in per capita travel consumption.

Figure 3-14 Relationship between income and the passenger transport task 1950–2005

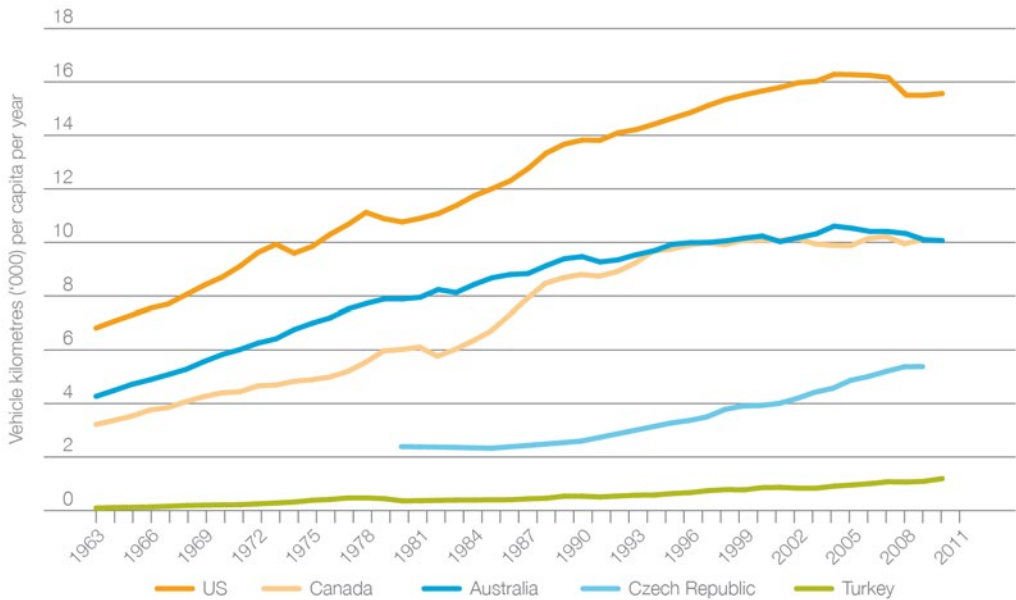


Source: Cosgrove and Gargett 2011

Figure 3-14 shows the relationship between per capita income and per capita travel in Australia from 1950 to 2005. This indicates that, as national income grows, the amount of passenger travel per capita at first rises steeply but then begins to plateau.



Figure 3-15 International per capita travel consumption comparison 1963–2011

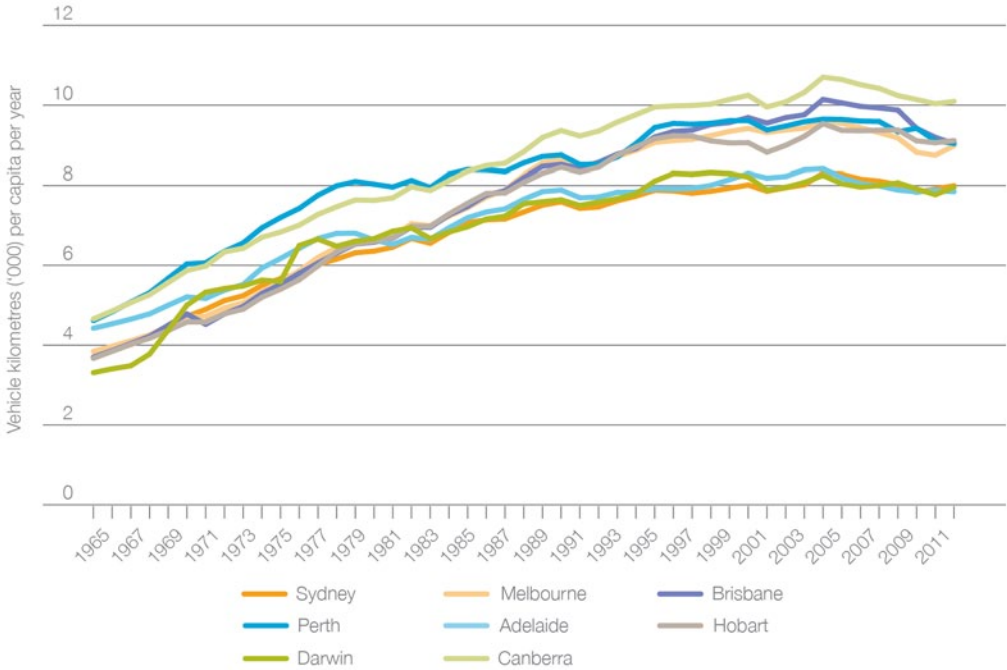


Source: BITRE 2012e

Figure 3-15 shows that this relationship between income and transport use seems common across a selection of high, middle and low income OECD countries. In Australia, Canada and the US, per capita travel rose steeply from the 1960s to the 1990s and then plateaued and fell in the first decade of this century. Intriguingly, the plateauing of consumption in most advanced economies commonly occurs when consumption reaches 9,000–10,000 kilometres per person irrespective of size and geography. The United States is the exception: the plateauing there occurred at around 16,000 kilometres per person (see further comparisons at BITRE 2012e).

A middle income country like the Czech Republic can expect that its per capita travel will continue to rise steeply as incomes rise. Countries with less advanced economies, on the other hand, are further back on the income scale and their per capita transport consumption is tracking only steadily upwards. Turkey is currently in this situation – in 2011, the average person was travelling a little over 1000 kilometres per year.

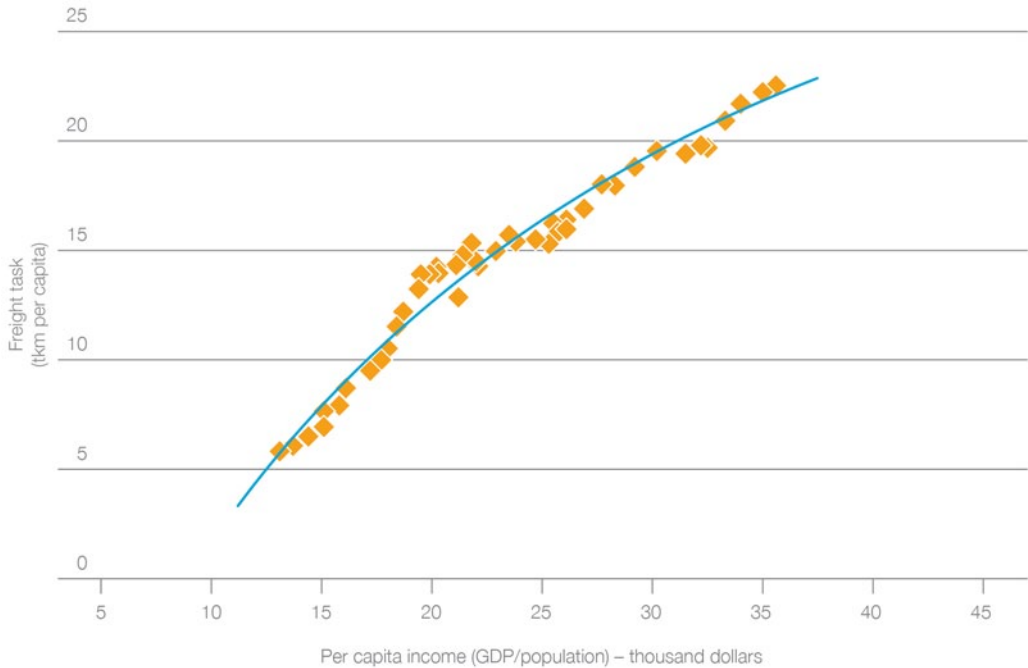
**Figure 3-16** Per capita vehicle kilometres travelled on passenger transport in Australian capital cities 1965–2011



Source: BITRE 2012d

Figure 3-16 shows that the national trend in passenger transport shown in Figure 3-13 is reflected in the capital cities, although there are variations on the theme. Whether the decline in car use translates to a longer-term phenomenon is the subject of considerable debate and future State of Australian Cities reports will continue to monitor the trend.

Figure 3-17 Relationship between freight task and income 1961–2005



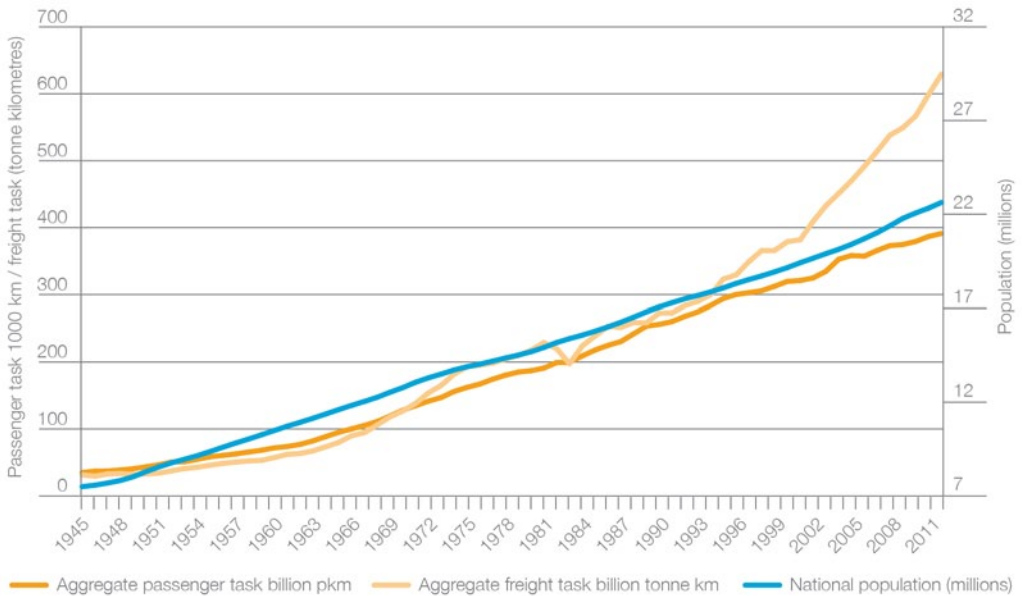
Source: Cosgrove and Gargett 2011

Figure 3-17 shows that the freight task has a different relationship to income than the passenger task. Rather than plateauing once income reaches a certain level, the freight task continues to rise. Note that while the passenger task is closely correlated with domestic incomes, the freight task is linked to exports and imports and in turn overseas incomes. In other words, the rapidly increasing income levels of Australia's trading partners will influence Australian domestic freight movements.

*Macquarie Point, Hobart.*

Image courtesy of Tasports and Alastair Bett Photography



**Figure 3-18 National freight and passenger transport task 1945–2011**

Source: Data from ABS 2012a, Cosgrove and Gargett 2011

Figure 3-18 shows that for 50 years after the end of World War II until the mid-1990s the freight and passenger task increases at a similar rate. Since that time, the passenger task has plateaued and declined while the freight task has continued to rise. This suggests that if per capita incomes continue to rise, freight will become an increasingly dominant part of the transport task generally and also in Australian cities. This will create a challenge for those cities or parts of cities where the road network has mixed demands from freight and passengers that cannot be overcome by scheduling. It will also put increased pressure on urban heavy rail networks where passenger and freight networks are entwined, such as in Sydney.

### Transport scheduling

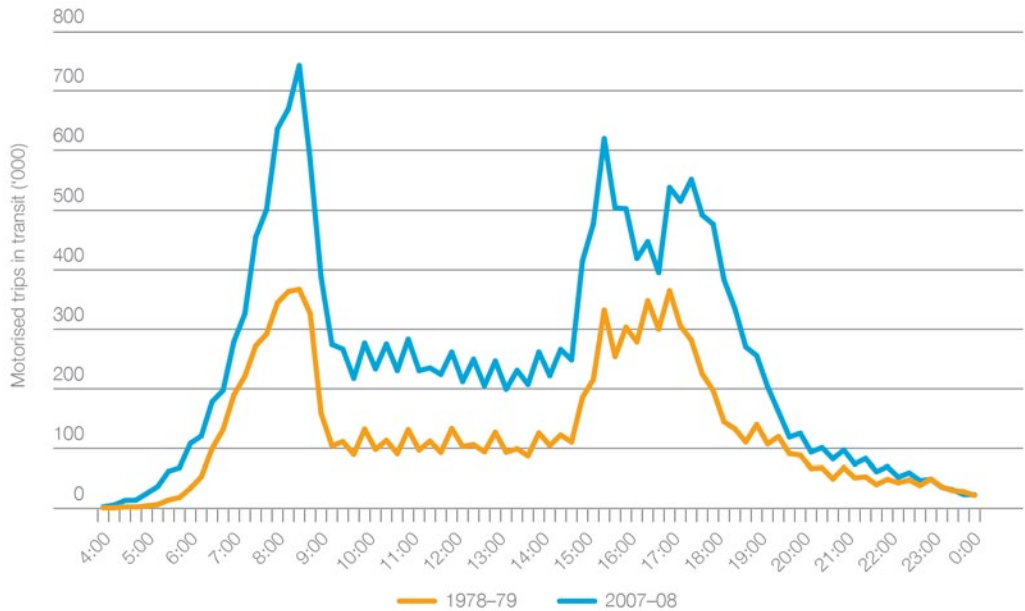
There are two main ways of measuring transport scheduling. The first is journey to work data collected by the ABS as part of the Census. The advantage of this data source is that it has records of where the commute started and finished and the transport mode. The disadvantage is that it only captures a quarter of urban passenger journeys. The journey to work data is particularly useful for analysing the industrial structure of cities and has been used extensively by Bureau of Infrastructure, Transport and Regional Economics (BITRE) in analysing Perth (2010), Melbourne (2011d) and Sydney (2012f) and South East Queensland (in preparation). The 2011 journey to work data was released in the final stages of the preparation of this report so detailed analysis has not been possible. However, it is briefly discussed in Chapter 5.

The second way to measure transport patterns is with Household Travel Surveys conducted by states and territories. These include all passenger travel, journey purpose, time and distance. Data from the Household Travel Surveys of Melbourne and Sydney is used extensively in this section.

Also helpful is the annual Household Income and Labour Dynamics in Australia (HILDA) survey which reports travel data (Melbourne Institute 2012).

Transport scheduling is a critical aspect of the urban passenger task. McGeoch compared a survey of travel distances and times in Melbourne in 1978–79 to one undertaken almost three decades later, in 2007–08 (2011). During this period, the boundaries of Melbourne expanded significantly and the later study reflected this change.

**Figure 3-19** Motorised trips over a 24-hour period in the Melbourne Statistical Division 1978–79 and 2007–08



Source: McGeoch 2011

Figure 3-19 shows the number of weekday motorised passenger trips in the two periods. As shown nationally in Figure 3-10, the growth in the urban transport task is apparent, with a near doubling over the 30-year period. The scheduling of the task throughout the day remains similar. The morning peak is now sharper and proportionally larger in 2007 than it was in 1978. The afternoon peak loading meanwhile has developed two peaks – one after school and the other at the home commute, peaking at 5:30pm. Noteworthy is that this home commute occurred nearly an hour later in 2007 than it did 30 years before.

McGeoch also reported that in terms of peak periods for different transport modes over the intervening three decades, car and train journeys have moved 15 minutes and 30 minutes, respectively, later in the morning peak.

The high morning peak load has significant implications for the capacity of urban transport infrastructure. If it was possible to spread this peak it would enable much more efficient use of transport infrastructure, which during other parts of the day operates at well below capacity. This could also remove or delay costly augmentation to transport infrastructure.

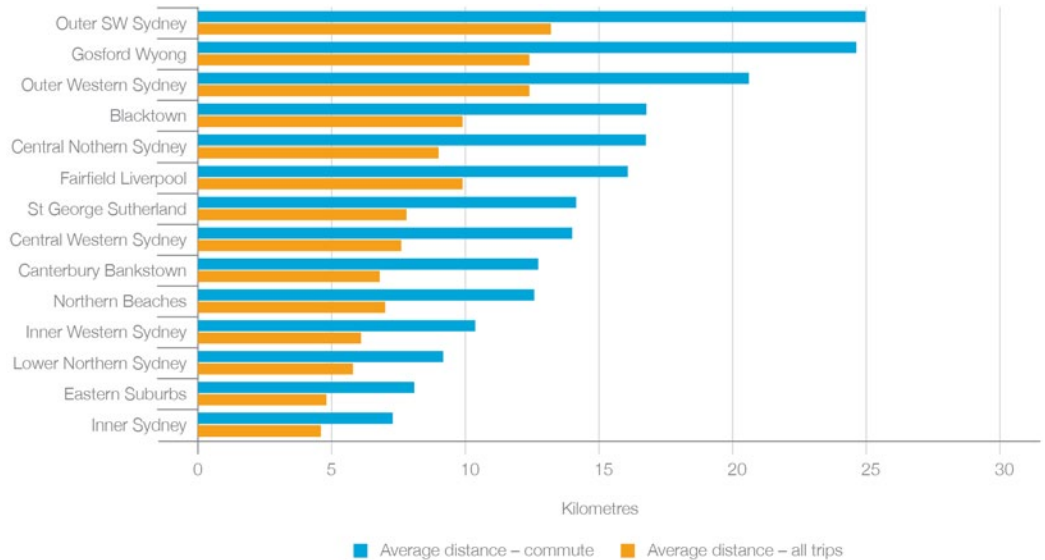
Table 3-1 Trip purpose Melbourne 1978–79 and 2007–08

Period	Year	Home	Work	Education	Personal Business	Shopping	Recreation	Transport of passengers	Other	Total%
07.15–09.15	1978–79	5.5	36.6	32.7	3.2	2.0	1.0	12.0	7.0	100
	2007–08	9.7	34.2	19.0	6.5	6.7	10.4	13.4	0.1	100
15.15–17.15	1978–79	70.5	1.6	0.4	5.5	6.9	3.5	8.3	3.3	100
	2007–08	60.6	3.9	0.6	4.9	8.5	11.5	9.9	0.1	100
All day	1978–79	40.6	13.6	8.7	7.8	8.4	5.8	8.9	6.2	100
	2007–08	37.2	16.6	5.0	6.7	10.5	15.0	8.9	0.1	100

Source: McGeoch 2011

McGeoch also examined the differences in travel purposes between the two periods (Table 3-1). There are two aspects of this table that are particularly noteworthy. The first is that only one person in three using motorised transport in the morning peak in both periods is someone going to work. The other two are using the network for other reasons, particularly education. The other is the rise of trips in the morning peak that appear to be discretionary. Recreation and shopping, for example, moved from three per cent of the morning peak in 1978 to 17 per cent 30 years later. It is interesting to note that the data in this table is almost exactly consistent with a similar study for Sydney in 2010–11 (NSW BTS 2012). This suggests that the pattern may be common across the larger capital cities.

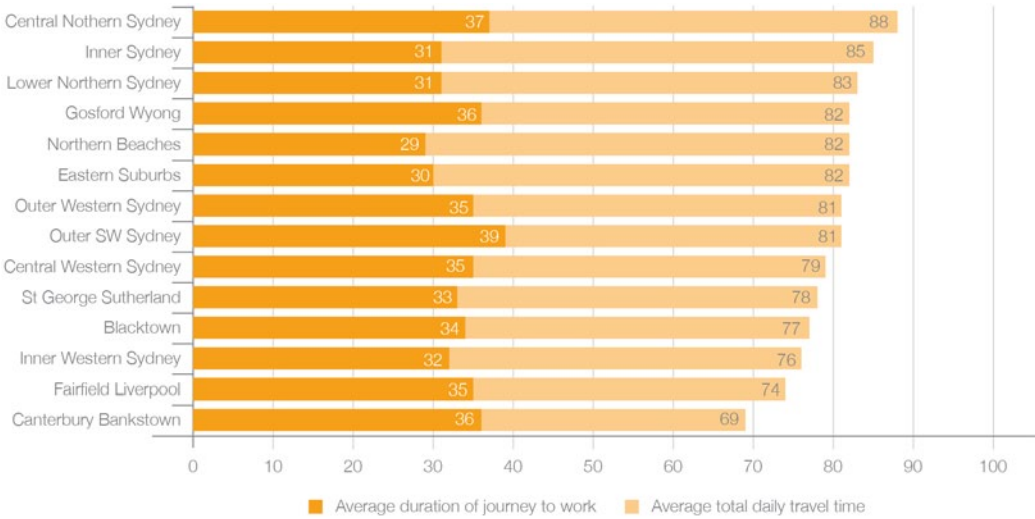
Figure 3-20 Average daily travel distances in Sydney's regions 2010–11



Source: NSW Bureau of Transport Statistics (NSW BTS) 2012

It is generally thought that those on the outskirts of major cities travel much longer distances than those in the centre. Data for trip distances for regions of Sydney from the NSW Bureau of Transport Statistics *Household Travel Survey 2010–11* (Figure 3-20) confirms this.

Figure 3-21      Average weekday travel times for regions of Sydney 2010–11



Source: NSW BTS 2012

However, Figure 3-21 shows that the total *time* devoted to travel was relatively consistent across the city and that residents of the CBD devoted some of the longest time to weekday travel.

This is consistent with the BITRE analysis of commuting patterns in Perth (BITRE 2010), Melbourne (BITRE 2011d) and Sydney (BITRE 2012f), which shows a remarkable uniformity of commuting times across and between cities of between 30 and 35 minutes. McGeoch’s 2011 study of Melbourne travel patterns suggests that these times have not changed much for at least the last 30 years despite the major changes in urban geography structures and the rise of women as a major transport user group with different travel patterns over that time (Morris et al. 2010).

This suggests the operation of an interesting principle known as Marchetti’s constant. Cesare Marchetti was an Italian physicist who calculated that people will devote on average 90 minutes a day to travel and no more. If this is the case, then rather than the structure of cities shaping their residents’ travel time budgets, the residents’ travel budgets may be shaping cities. The question then becomes: is this leading to unproductive urban geographies? In other words, is the real cost of inefficient transport networks not in loss of time to individuals but, rather, are suboptimal employment densities leading to lower industry productivity, particularly in the growing transaction industries, a cost borne by the nation? This suggests that improving the efficiency of urban transport systems by putting people in their economically optimal location within a total travel time of 90 minutes may be the key to improving the productivity of cities.



## Productivity and transport in cities

Concentrating jobs at sufficient density to generate better labour productivity means that large numbers of people must be moved to relatively small areas within an average total travel time envelope of 90 minutes or less. Since space becomes a critical constraint in CBDs and other dense centres, mass transit systems become the only viable solution. The theoretical capacity of a single commuter rail line operating at peak efficiency with acceptable crush levels is the same as a 10-lane freeway with an average car occupancy ratio of 1.2 (Hale 2011), although in practice it is somewhat less (Stephens and Adams 2012). This is one of the main reasons that 65 per cent of commuter mass transit usage in Melbourne involved travel to a workplace in central Melbourne and 59 per cent in Sydney (BITRE 2011d, BITRE 2012f).

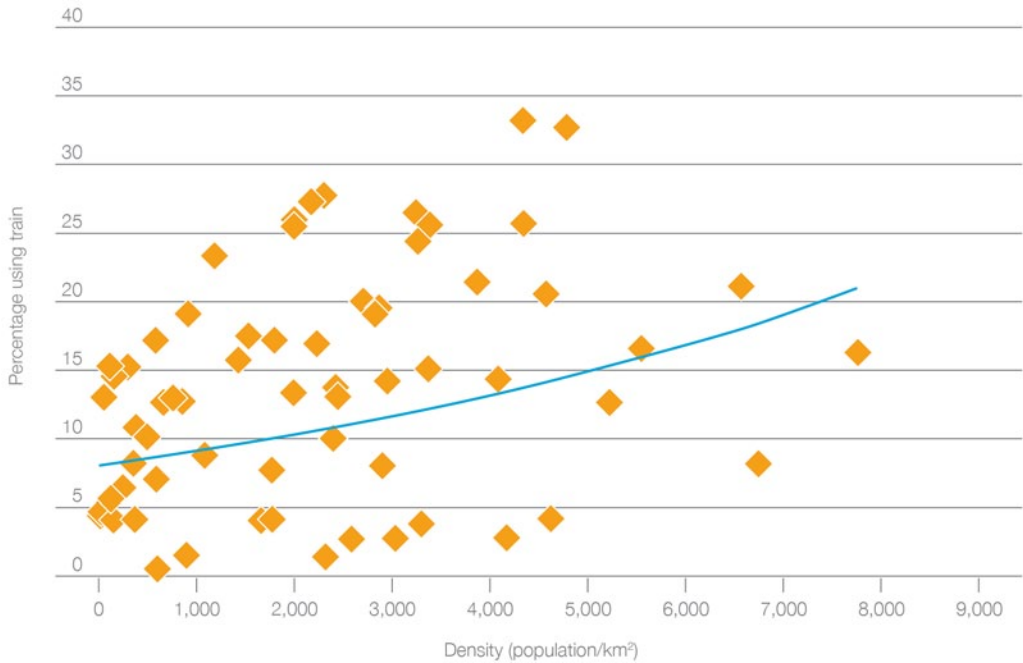
Figure 3-22 Relationship between mass transit usage and job density, Sydney 2006



Source: Daniels and Mulley 2011

Figure 3-22 shows the clear relationship between job density and mass transit use within Sydney.

Figure 3-23      Train use and residential densities, Sydney 2006

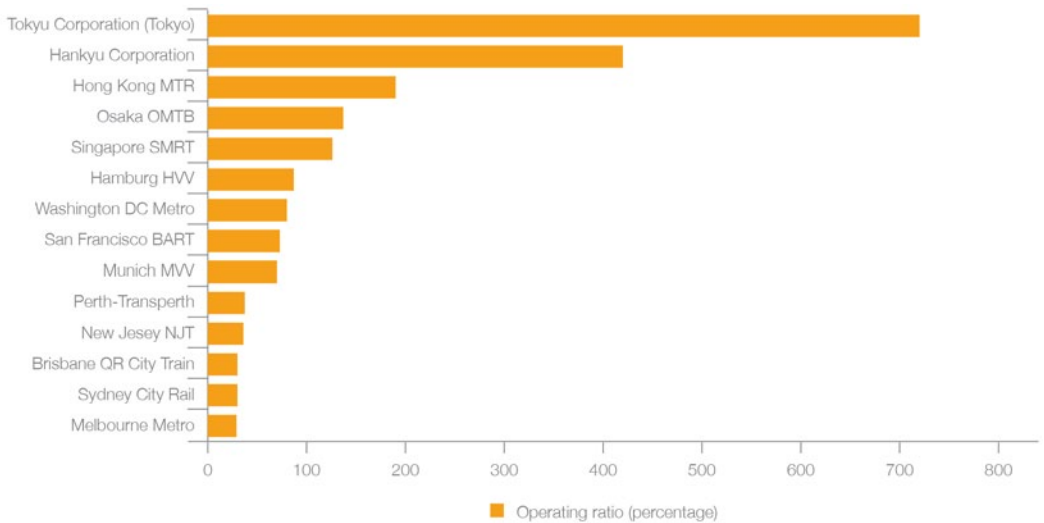


Source: Brooker and Gee 2009

The link between job density at destination and train use is much stronger than the link between residential density and train use (Figure 3-23). This indicates that the density of the destination is much more important than the density at the journey's origin for determining mass transit usage levels.

The transport mode doing the heavy lifting for high agglomeration industries is rail. Our rail networks are largely legacy systems that were built with substantial extra capacity and are capable of absorbing significant increases in loading without major additional capital costs. It is now clear, especially in Sydney and Melbourne, that much of this surplus capacity has been taken up in recent years with population growth and mode switching (Brooker 2010, City Rail 2012). This indicates that productivity rates in cities will be increasingly constrained by the capacity of mass transit systems, particularly rail. How to deal with this reality is now being debated across our major cities.

**Figure 3-24** Fare recovery as a proportion of operating costs among selected international rail operators



Source: Hale 2011

Figure 3-24 uses 2007–08 data to show that fare recovery and other sources of revenue for rail systems in Australia are low by international standards. Asian rail operators generally capture the value of the rail line through property development in the same manner as the pioneering British and American rail did. The more prevalent practice in the West now is to allow the value of rail development to be captured by others. However, even by comparison with low-density cities such as Washington DC and San Francisco, Australian operational cost recovery is low.

**Table 3-2** Fare recovery in Sydney's mass transit systems as a proportion of operating costs

	2008–09	2009–10	2010–11	2010–11 shortfall in revenue
CityRail	27%	24%	22%	\$2,333 million
Metro Buses	41%	38%	32%	\$648.1 million
Outer Metro Buses	14%	13%	11%	\$167.4 million
<b>Total</b>				<b>\$3,148.4 million</b>

Source: Data sourced from Independent Pricing and Regulatory Tribunal (IPART)

Table 3-2, using Sydney's mass transit system as an example, shows that the proportion of operating costs recovered in fares has been declining across all modes. The shortfall in the 2010–11 year exceeded \$3 billion in operating costs alone. A preliminary analysis by BITRE of cities where publically available data is adequate to make an assessment indicates that Sydney's mass transit system recovers 24 per cent of its operating costs through the fare box and Melbourne does better at 31 per cent, while Perth does best of all at 38 per cent. For Canberra's bus only system, however, users pay only 17 per cent of operating costs.

Table 3-3      Fare multiples under different levels of recovery

	30%	60%	90%
Sydney	1.25	2.5	3.8
Melbourne	0.97	1.9	2.9
Brisbane	0.94	1.9	2.8
Perth	0.79	1.6	2.4
Canberra	1.8	3.6	5.3

Source: BITRE analysis of publically available data

Estimates of the level of fares necessary to achieve 30, 60 and 90 per cent cost recovery can be seen in Table 3-3.

The current mass transit financial model of large Australian cities is not sustainable and presents serious challenges for future growth. Low levels of cost recovery in the context of the fiscal priorities of governments mean that, in the absence of new revenue, it will be difficult to fund any new investment in transport infrastructure or operations.

The current financial model also means that the economic benefits of concentrating jobs in city centres comes at a significant cost to the rest of the economy through the subsidisation from state and territory revenue of the mass transit system servicing it.

It is also evident that capitalising public transport subsidies into the land value surrounding mass transit systems can cause increasing social inequity. Higher land costs mean that those on lower incomes must live further away from public transport while those on higher incomes can afford to live within a convenient distance and can also benefit from highly subsidised fares.

*Milsons Point station, Sydney.*

Image courtesy of Richard Longman



## Perth rail system

Low density Perth is typical of the post World War II suburban growth of Australian cities (Kane 2009). Despite its flat topography and high reliance on car use, Perth's radial rail system forms a key part of its transport system.

Significant investment has seen the rail network electrified and expanded from 66 kilometres in 1990 to 169 kilometres over the last two decades. The opening of the Joondalup (now Clarkson) line in 1992 and the Mandurah line in 2007 has effectively seen Perth complete the north–south spine of its radial system adding a significant catchment area for patrons. Use of the three pre-1992 lines – Midland, Armadale and Fremantle – has also more than tripled over the same period (BITRE 2012g).

The expansion was only made possible through the long-term vision of planners and engineers who designed roadways with wide central reservations on which the railways could be built.

The network is notable for the long distance between stations by Australian standards. The Clarkson line has an average of three kilometres between stations and the newer Mandurah line has six kilometres between stations, which means that average line speeds are relatively high. The Mandurah line has speeds averaging 85 kilometres per hour. Contributing to the high average is a focus on keeping train dwell times at stations low. In addition, Perth's network structure is simple, with minimal interface between passenger and freight lines. The simplicity of the system maximises capacity and minimises delays. Except at the extreme ends of the operating day, the maximum time between trains is 15 minutes (BITRE 2012f).

There is emphasis on safe, well-lit platforms and good complementary bus connections at stations with interchanges that improve the public transport experience by providing shelter to passengers, minimising walking distances and providing walkways over busy roads. There is also a strong focus on ensuring ease of access to stations, with free or low-cost park-and-ride facilities. All this has increased patronage on the Perth rail network which has grown from seven million trips in 1992 to 59 million in 2010–11 (BITRE 2012f).

## Conclusion

This section began with a discussion about the need to increase national productivity and by extension, the productivity of major cities where three-quarters of the population work. It looked at the changing industrial structure of cities – in particular, the increasing concentration of economic value and employment in city centres. This raised the issue of the transport network needing to concentrate large numbers of workers in a relatively small area within a 45-minute travel time from home. It concluded that the mode most suited to this task was rail because it is the most space-efficient. However, rail systems in the larger cities are already at or near capacity. The situation is made worse by the financial structure of rail which seems unsustainable on the information available. It is clear that urban mass transit systems must become more sustainable by better cost recovery through the fare box and/or the capital value of the surrounding land. If not, the flow on effects to national productivity could be considerable.

### Economic impact of ports to major cities

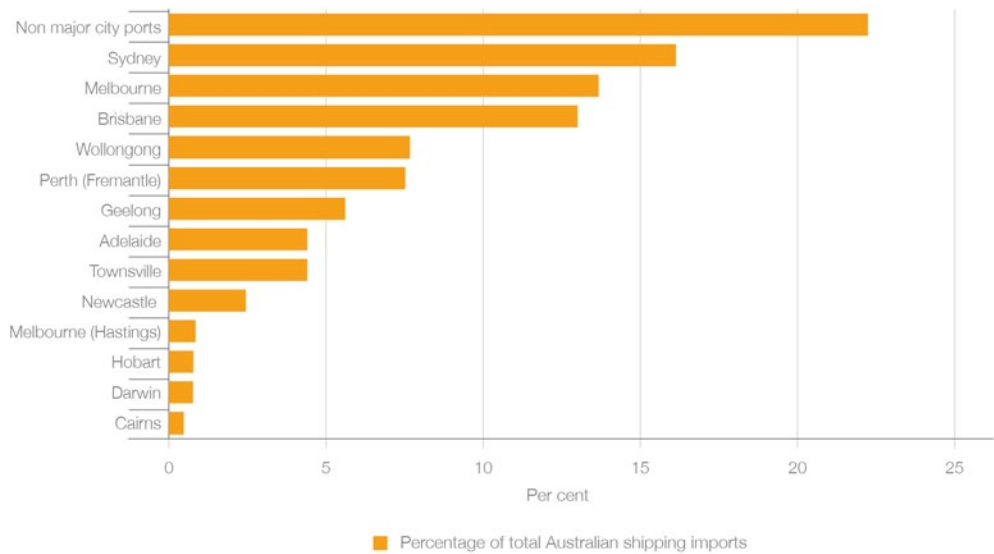
Ports in major cities are important nodes of economic activity, with cargoes of container goods, bulk goods and agricultural cargo operations for both import and export (BITRE 2012a). The majority of port movements are to and from international destinations. Interstate and intrastate freight shipping (known as coastal shipping) accounts for a modest share of the task, primarily between the mainland and Tasmania (mostly through Melbourne and accounting for 13 per cent of Melbourne’s container trade task) and between the eastern states and Western Australia (BITRE 2011a).

The major city ports handle most of Australia’s imports, as shown in Figures 3-25 and 3-26. Less than one-quarter of imports go through ports outside a major city. Melbourne’s docks handle the largest volume of imports by value and Sydney docks the largest volume of imports by weight (BITRE 2011a). Ports outside of the major cities account for a larger volume of exports, also illustrated in Figure 3-25. This is in part due to the volume of bulk raw materials shipped internationally from ports in regional and remote areas of Australia.

**Figure 3-25** Proportion of imports and exports by volume (mass tonnes) for 2011–12



Source: Ports Australia 2012

**Figure 3-26 Imports arriving by ship into Australian ports for 2011–12**

Source: Ports Australia 2012

Increasing Australia's port productivity helps us compete better with ports and freight supply chain systems in other countries. Similarly, more productive ports reduce the cost of overseas manufactured goods for the Australian consumer and this flows on to the Australian economy (GHD 2010b). Productivity gains have been made in a number of ways, such as the automation of the Patrick Port of Brisbane operation and improvements in road and rail networks connecting the ports and the construction of intermodals.

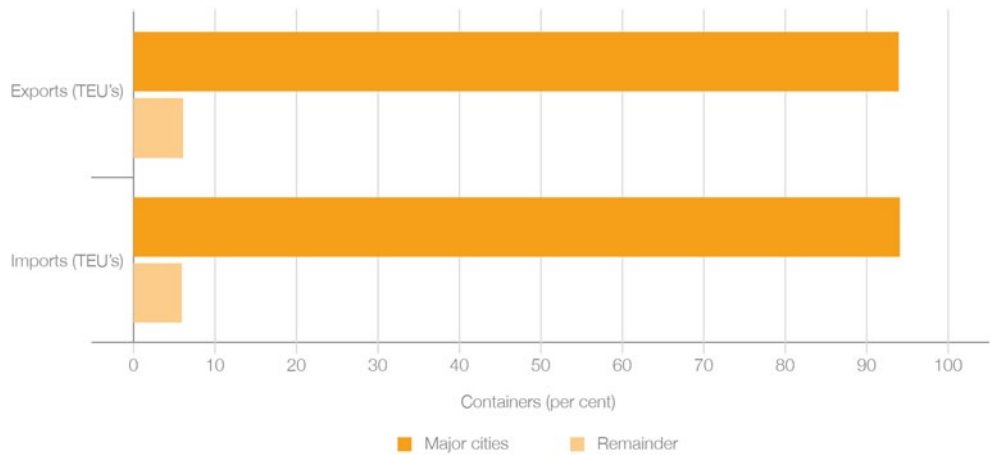
Other non-cargo users of major city ports include the Defence Force (particularly at the ports of Darwin and Townsville), cruise lines (particularly at the ports of Cairns and Sydney) and the passenger and vehicular ferry between Melbourne and Devonport in Tasmania (99 kilometres from Launceston).

### Containers

Figure 3-27 shows that freight container movements in Australia are strongly concentrated within the major cities with approximately 94 per cent of all container movements taking place within 10 major city ports. The majority of these movements take place within the five largest capital city ports; see Figure 3-28.



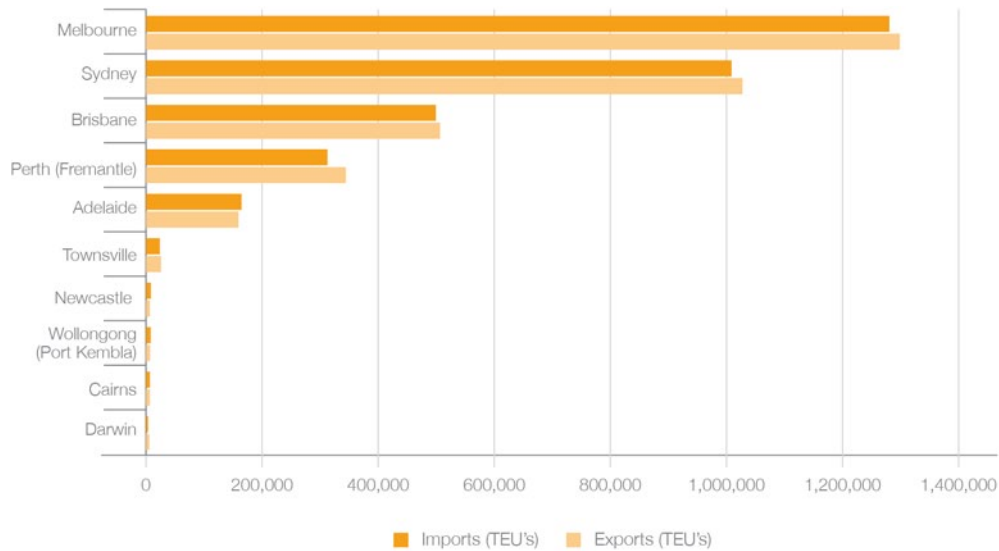
Figure 3-27 Container freight by major cities and the remainder of Australia for 2011–12



Note: Container movements are measured in Twenty-foot Equivalent Units (TEUs) – the standard unit for measuring shipping container volume. Includes all major cities that have ports.

Source: Ports Australia 2012

Figure 3-28 Container freight by major cities for 2011–12



Note: Container movements are measured in Twenty-foot Equivalent Units (TEUs) – the standard unit for measuring shipping container volume.

Source: Ports Australia 2012

The majority of container freight arriving in these ports is servicing the local metropolitan market. Figure 3-29 shows container movement for Fremantle Port (Perth). Freight typically travels 20 to 30 kilometres from Fremantle Port. Seventy per cent of import containers are unpacked within just 10 predominantly industrial suburbs of Perth and 32 per cent unpacked in just the three suburbs, Kewdale, Forrestfield and Welshpool (Main Roads Western Australia et al. 2012).

In Melbourne 87 per cent of container imports are unpacked within the metropolitan region (including the city of Geelong), 2.9 per cent go to regional Victorian destinations and 9.8 per cent go to interstate destinations. The Melbourne suburbs with the highest volume of container imports are Dandenong, Laverton North, Somerton, Altona and Tullamarine. Figures for container exports in Melbourne differ greatly to imports with just 54 per cent coming from within metropolitan Melbourne, 23 per cent from regional Victoria and a further 23 per cent from interstate. Less than 20 per cent of container freight travels outside of the immediate urban region (GHD 2010).

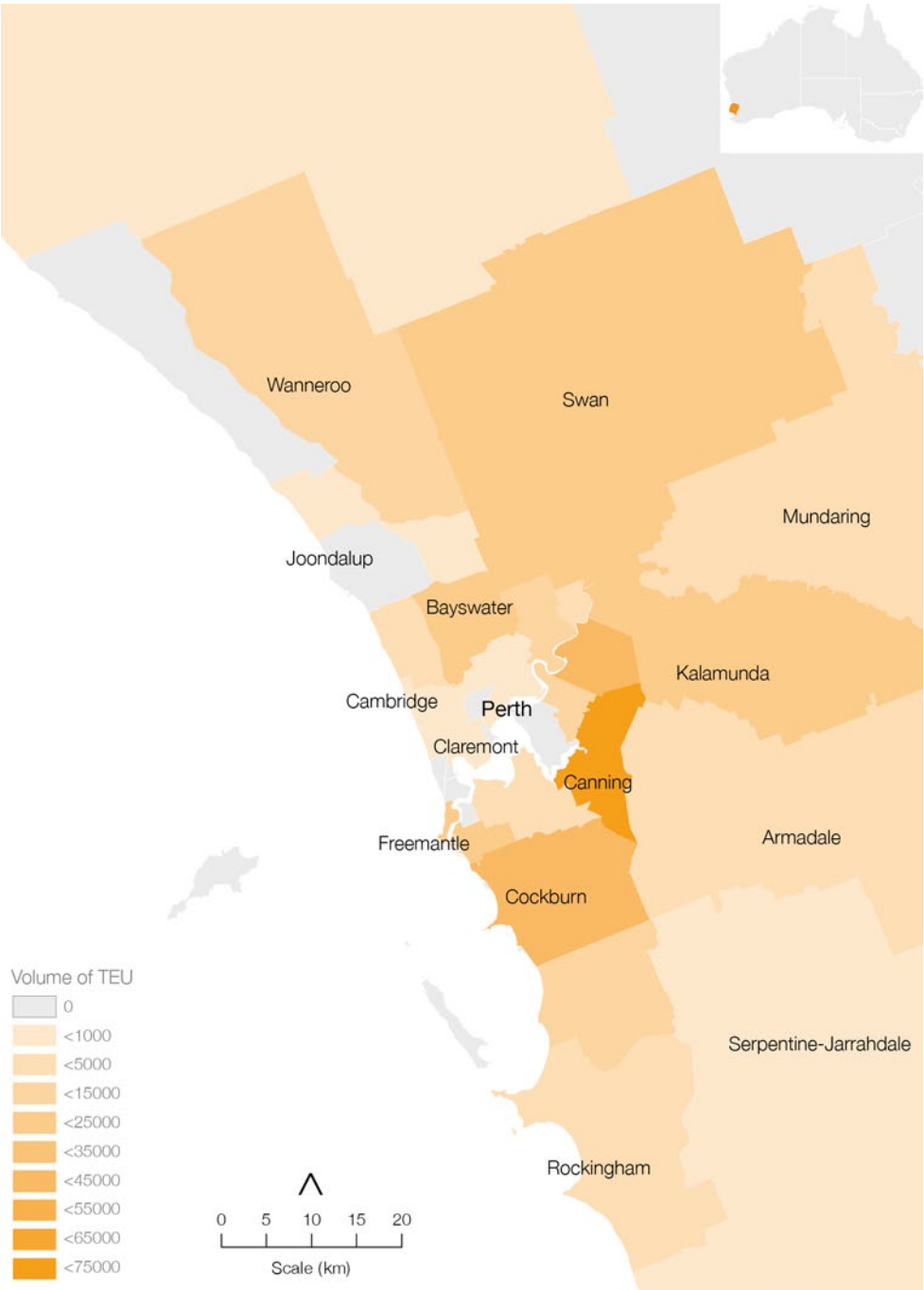
In Sydney 85 per cent of containers are packed or unpacked within 40 kilometres of Port Botany (Flynn 2011).

*Newcastle Harbour, New South Wales.*

Image courtesy of RDA Hunter



Figure 3-29 Container movement for Fremantle Port (Perth)



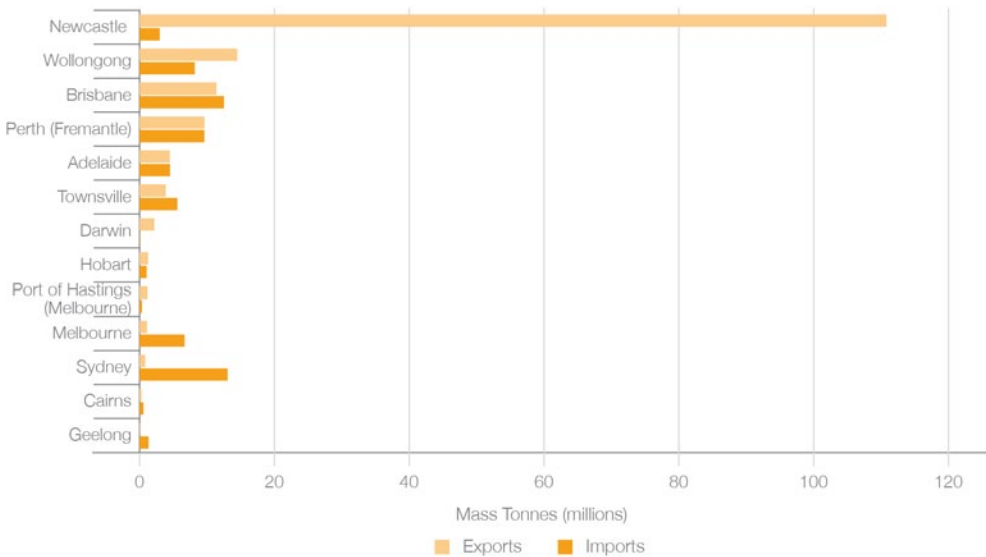
Note: Container movements are measured in Twenty-foot Equivalent Units (TEUs) – the standard unit for measuring shipping container volume.

Source: Data supplied by Fremantle Ports as a major partner in the 2012 Fremantle Port Container Movement Study in conjunction with Main Roads Western Australia, Government of Western Australia Department of Transport and Freight and the Logistics Council of Western Australia (Fremantle Port 2012)

## Bulk goods and commodities

Ports in the capital cities are largely dominated by container trade. However, bulk goods and other commodities are significant in some of the smaller major cities, as can be seen in Figure 3-30. For example, the port of Newcastle has by far the largest share of bulk exports of the major cities (largely coal). Other cargo exported from major city ports include motor vehicles and motor vehicle parts, dominated by the Port of Melbourne, steel exports, largely from Wollongong and livestock exports predominantly from Perth and Darwin (Ports Australia 2012).

**Figure 3-30 Bulk imports and exports by major city for 2011–12**



Source: Ports Australia 2012

## Land use planning

Ports are rarely destinations in themselves. They make up part of a broader supply chain in cities and affect and are affected by the urban road and rail systems. Congestion around ports and their wider supply chain network can cause considerable delays to freight movements. Freight movements around urban ports must compete with other road and rail users and bottlenecks are common at peak commute times.

Land use planning and development and wider supply chain networks can significantly affect the productivity of ports. As movements increase in line with our rapidly growing freight task, opportunities to expand will be limited unless additional land and buffers are protected. Ports such as Botany already have a pressing need for additional container storage space (GHD 2010a).

Statutory land use plans for Australian ports vary greatly in focus and detail. A common shortcoming is a failure to consider what will be needed to support ports in years to come (GHD 2010a). Land use plans for ports and integration with local and state government planning schemes and objectives are a significant component of Infrastructure Australia and the National Transport Commission's *National Port Strategy*.

## Supply Chain

Freight by rail through cities often has to contend with urban passenger rail services and to a lesser degree with intercity and regional passenger services. Passenger rail is generally given priority over freight services and this has led to calls for an increase to the number of freight only railway track or freight only roads linking to ports. The Australian Government is supporting a growing network of intermodal terminals which can vastly increase the speed of freight transfer around the country and to and from ports.

Some cities have better segregation between urban passenger and freight railways lines than others. Perth has an extensive dedicated rail freight network linking freight terminals at Forrestfield/Kewdale and the Fremantle Port. Perth has only one kilometre of shared passenger-freight track and 121 kilometres of dedicated to freight. This is the largest dedicated freight rail network of any Australian city. The dedicated rail freight networks in other capitals cities are relatively small, ranging from 33 kilometres in Sydney to 66 kilometres in Melbourne, although all of the capital cities have direct freight rail access to ports. As a proportion of the total metropolitan route, Sydney and Brisbane have the most shared passenger – freight track at 42 per cent and 47 percent respectively.

Table 3-4 shows major city ports that are connected to intermodal terminals, direct railway access and statutory land use plans ( Department of Infrastructure and Transport 2012, GHD 2010a).

**Table 3-4** Major city port connections to intermodal terminals, direct railway access and statutory land use plans

Port with	Intermodal terminals	Direct railway access	Statutory land use plans
Sydney (Botany)	✓ (a)	✓	✗
Wollongong (Port Kembla)	✓	✓	✗
Newcastle	✗	✓	✗
Port of Melbourne	✓	✓	✓
Geelong	✓	✓	✓
Brisbane	✓	✓	✓
Cairns	✗	✗	✓
Townsville	✗	✓	✓
Adelaide	✓	✓	✗
Perth (Fremantle)	✓	✓	✓
Darwin	✓	✓	✗
Hobart (b)	✗	✗	✗

Note: (a) Moorebank Intermodal Terminal development planned to be operational from 2017

(b) Tasmanian shipping occurs through the Port of Burnie

Source: Department of Infrastructure and Transport 2012, GHD 2010a

*Port of Brisbane.*



## Labour force participation

### Background

Over the past couple of decades Australia's labour force participation has experienced strong growth. This has been largely due to increased participation of females aged 24 to 54 years, and both males and females aged 45 years and above (Borland 2011, Gilfillan and Andrews 2010, ABS 2012d). Between 2001 and 2011, the overall labour force participation of males remained relatively steady and rose by five percentage points for females, with most of the increase in older age groups (ABS 2012d).

The composition of Australia's workforce has also changed considerably over the past couple of decades. There has been a continuing trend of increased female, part-time and casual employment. New part-time and casual jobs have mostly been filled by women and young people (ABS 2012c, Borland, 2011). Women now make up around 70 per cent of the part-time labour force (ABS 2012c).

The shift to a post industrial economy has meant that employment in agriculture and manufacturing has declined, while employment in the sectors of finance, mining, construction, professional, retail, tourism and health care has increased. Somewhat related to this, the occupational composition of employment has become more polarised. There are now more jobs towards the top of the earnings distribution (such as management and professional jobs) as well as the bottom (such as carer jobs) and fewer jobs (such as clerical work) near the centre (ABS 2012c, Borland 2011). The labour force is also becoming more highly skilled, with a greater percentage of workers holding post school qualifications (SGS Economics and Planning 2012).

Workforce participation is very important to the productive capacity of the nation. While the size of the labour force is expected to grow over the next 40 years, the proportion of the population that is of working age is projected to decline due to the ageing of the population. Population ageing is a challenge universally affecting developed nations around the world (Australian Government 2010).

In Australia, this will place pressure on the economy, living standards and government finances because it will decrease the proportion of working age people supporting dependent children and the aged. It is already thought to be contributing to the slowing of Australia's economic growth (Gilfillan and Andrews 2010, Australian Government 2010). The number of people of working age to support every person aged 65 years and over is expected to drop from five in 2010 to 2.7 people by 2050. Over the next 40 years, the number of people aged 65 to 84 years in Australia will more than double and the number of those over 84 years old will more than quadruple (Australian Government 2010).

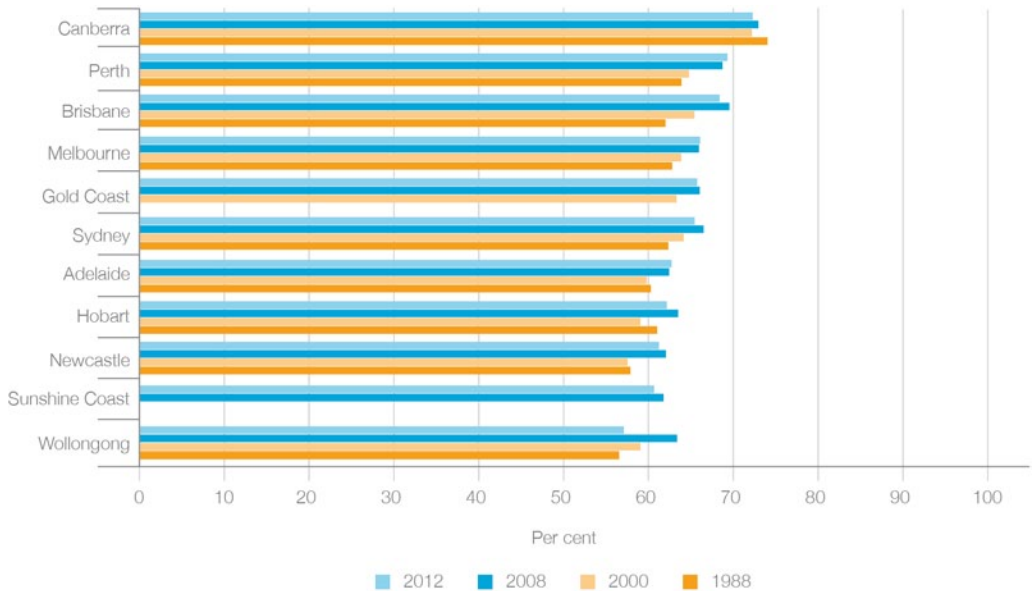
While population ageing is likely to lower Australia's overall participation rate, steps to improve participation of key workers aged 15 to 64 could help minimise this (Business Council of Australia 2008). Participation rates vary for certain sub-groups of the working age population, and some sub-groups offer a greater potential to boost workforce participation rates. There is also variation in participation rates across Australia's major cities. Some cities, particularly regional and smaller cities, offer greater opportunities to boost workforce participation rates because they have more underutilised labour capital (ABS 2012c, Skills Australia 2009).



## Labour force participation by city

Unfortunately, the participation rates for all major cities are currently unavailable because the city areas used in State of Australian Cities reporting are not the same as the boundaries used to collect labour market statistics. The cities for which data was available are shown in Figure 3-31.

**Figure 3-31 Labour force participation rates in selected major cities 1988–2012**

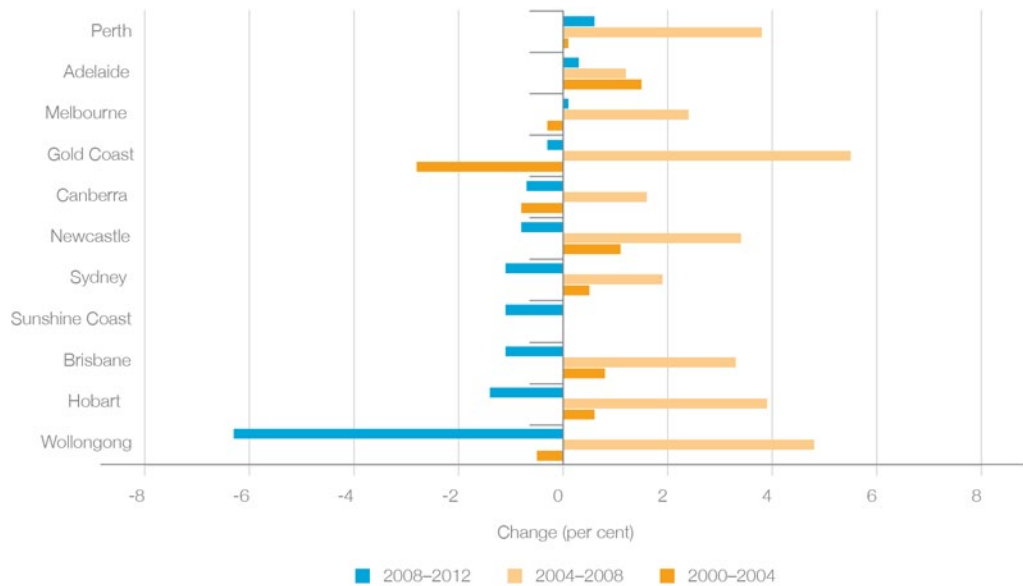


Note: Projection for 2012. Data not available for Sunshine Coast 1988, 2000, Gold Coast 1988. Data was not available for Darwin because the data collection area for the Darwin region covers the whole of the Northern Territory. Canberra does not include Queanbeyan because data is currently unavailable.

Source: Derived from ABS 2012d

Most of the major cities have experienced growth in their labour force participation rates since 1988. However, participation growth has slowed for many cities since 2008 and in some cities it has declined, possibly due to subdued economic conditions since the Global Financial Crisis and population ageing. Non-capital city participation rates are notably lower than their capital city counterparts.

Figure 3-32      Change in labour force participation rates for selected major cities 2000–12



Note: Projection for 2012. Data not available for Sunshine Coast 2000 to 2008. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

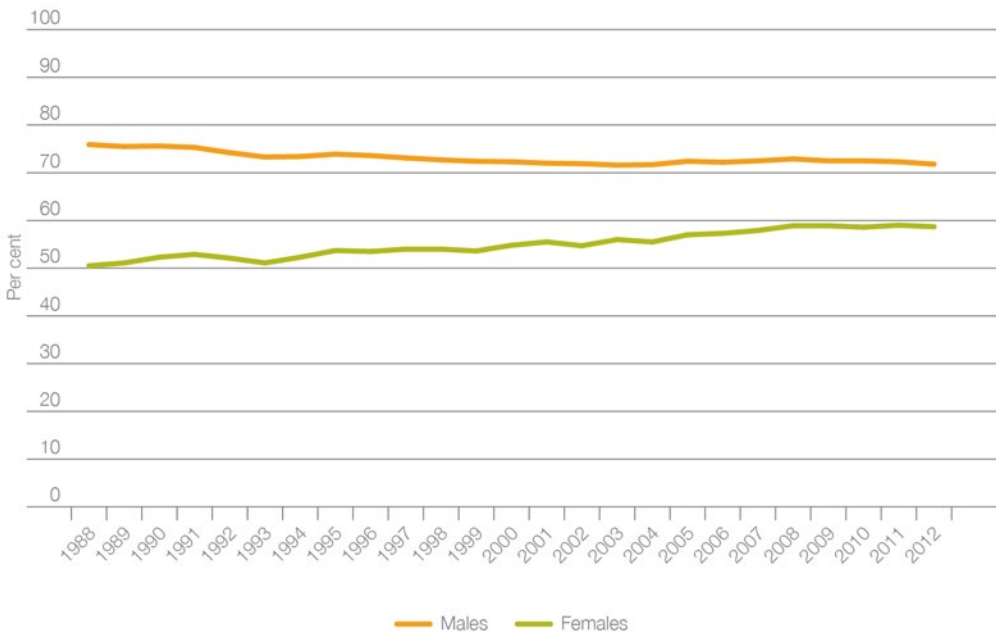
Figure 3-32 shows that Brisbane and Perth have enjoyed the highest growth in participation since 2000. Perth's participation rate has continued to increase since 2008; the only other city to do this is Adelaide, albeit at a lower rate. Canberra has the highest participation rate of the major cities, at over 70 per cent. However, it is the only major city for which data is available that is showing a decline since 1988.

Wollongong and Newcastle have some of the lowest participation rates, reflecting the trend of lower participation rates in non-capital cities. However, while Newcastle's rate has increased significantly since 1988, Wollongong's has not. Notably, Wollongong's rate has declined more than seven per cent since 2008 – a much faster decline than experienced in any other major city for which data is available.

## Labour force participation by gender

Gender has a large influence on Australia's labour force participation, as it does in other developed countries. Figure 3-33 shows that males have a higher aggregate labour force participation rate (about 72 per cent) in Australia than females (about 59 per cent) (ABS 2012d). Women comprise 45.6 per cent of Australia's workforce. Of Australia's full-time employees, 35.2 per cent are female and of Australia's part-time employees, 70.4 per cent are female. On average, women working full-time earn 17.6 per cent less than men working full-time. The wage gap between males and females in Australia has remained relatively stable for the past 30 years (ABS 2012d).

**Figure 3-33** Australian labour force participation rates 1988–2012

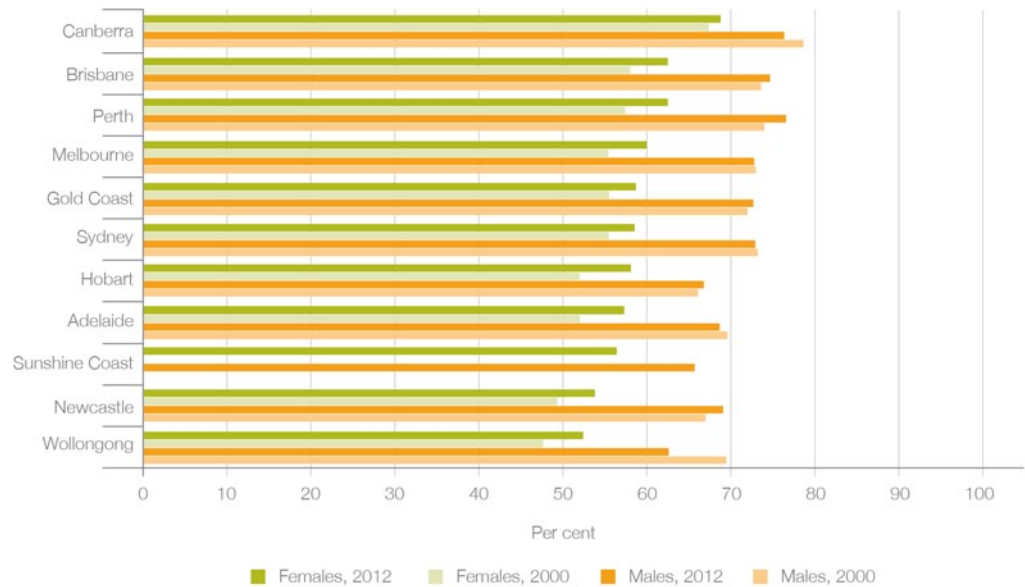


Note: Projection for 2012.

Source: Derived from ABS 2012d

Figure 3-33 shows that the increase in female labour force participation in Australia since 1988 has more than offset the decline in male participation. Female participation increased from around 50 per cent in 1988 to around 59 per cent in 2012, helping to boost Australia's total participation rate from around 63 per cent to around 65 per cent over the same period (ABS 2012c, ABS 2012d). However, the increase in female participation has levelled off since 2008. The male participation has remained relatively steady since 2002.

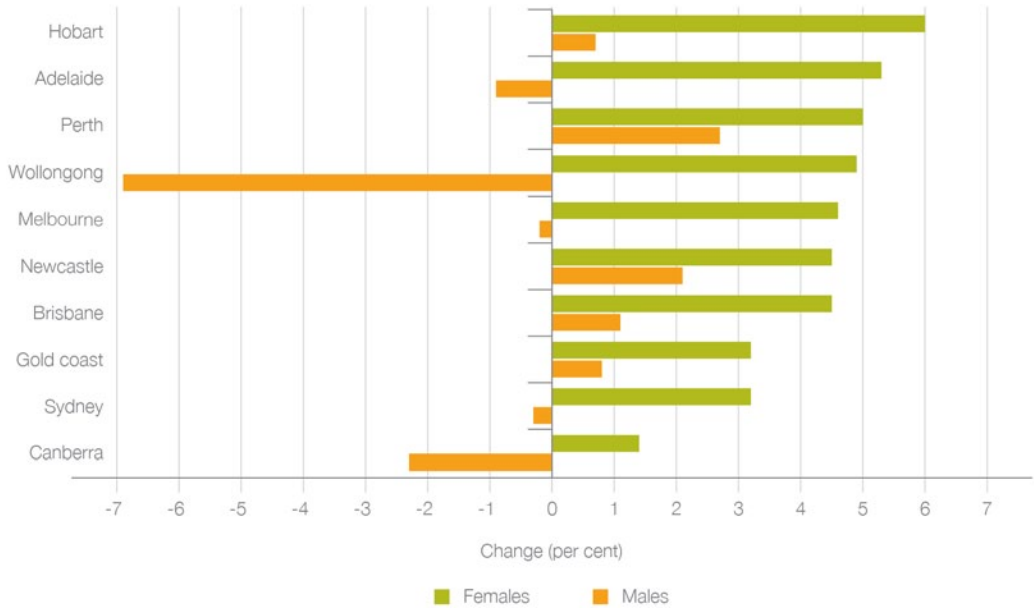
Figure 3-34      Labour force participation rates by gender for selected major cities  
2000–12



Note: Projection for 2012. Data not available for Sunshine Coast for 2000. Canberra does not include Queanbeyan.  
Source: Derived from ABS 2012d

Figures 3-34 and 3-35 illustrate that most of the major cities (for which data is available) have followed similar female participation rate trends to the Australian labour force since 2000 – a notable increase in the female participation rate. Changes to male participation rates across the cities have been more variable. Wollongong’s participation rate changes are particularly interesting: between 2000 and 2012 its female participation rate increased by nearly five per cent, while its male participation rate declined by nearly seven per cent.

**Figure 3-35** Change in labour force participation rates by gender for selected major cities 2000–12

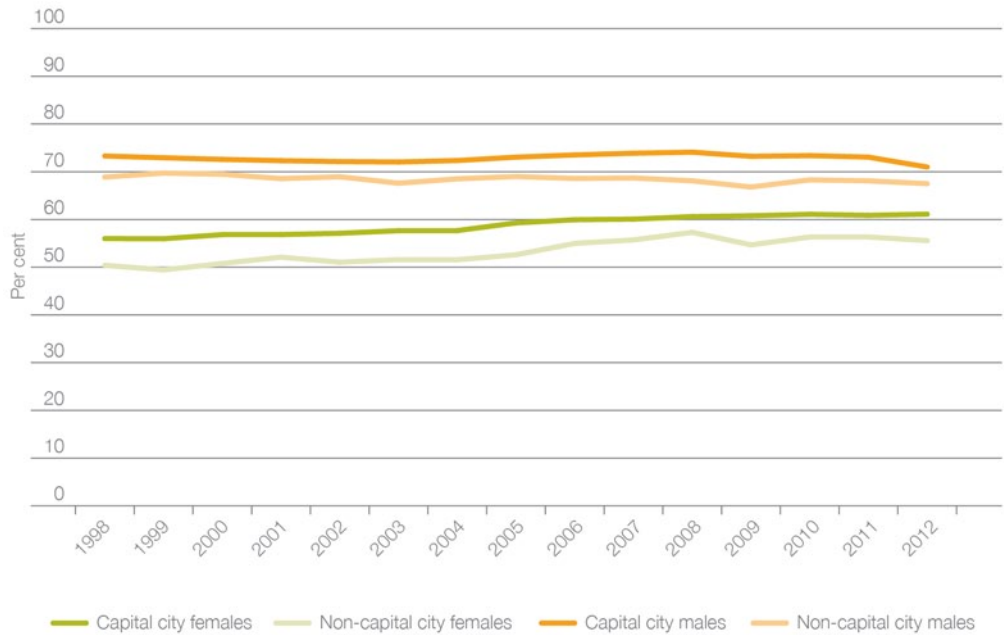


Note: Projection for 2012. Data not available for Sunshine Coast. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

Labour force participation rates are significantly lower for males and females in non-capital cities compared to those in the capitals. This suggests that there may be more underutilised labour in non-capital cities and thus potential for boosting their labour force participation rates. However, capital city males and non-capital city males follow similar trend lines, as do capital city females and non-capital city females, as shown in Figure 3-36.

Figure 3-36      Average labour force participation rates for capital cities and non-capital cities 1998–2012



Note: Data based on selected capital and non-capital cities, where data is available.

Source: Derived from ABS 2012d

There has also been a significant increase in the estimated value of female human capital in Australia's largest cities. Measuring human capital is an inexact science but in a recent report based on the methodology in ABS 2008, SGS Economics and Planning estimated that the human capital value of females increased at a much faster rate than that of males from 1996 to 2006 in both Melbourne and Sydney, particularly for those with higher degrees and bachelor degrees (2012 pp. 65, 79: Tables 4 and 5). For Melbourne, the estimated value of human capital for males with a higher degree in the city increased by 108.4 per cent between 1996 and 2006, whereas for females it increased by 247.7 per cent. For males with a Bachelor Degree, it increased by 71.5 per cent and for females by 110.3 per cent. For Sydney the estimated value of human capital for males with a higher degree in the city increased by 93.6 per cent between 1996 and 2006, while for women it increased by 202.8 per cent. For males with a bachelor degree, it increased by 64.7 per cent, whereas for women it increased by 107.3 per cent.

Table 3-5 Estimate of Melbourne's human capital (\$ billions)

	1996	2001	2006	Growth 1996–2006
<b>Males</b>				
Higher degree	26.3	35.0	54.8	108.4%
Bachelor degree	117.2	154.0	201.0	71.5%
Skilled labour	153.9	187.7	213.3	38.6%
Unqualified	222.8	243.2	346.4	55.5%
Total	520.2	619.9	815.4	56.7%
<b>Females</b>				
Higher degree	10.9	19.3	37.9	247.7%
Bachelor degree	86.8	130.7	182.5	110.3%
Skilled labour	64.9	80.3	103.1	58.9%
Unqualified	199.6	219.7	261.3	30.9%
Total	362.2	450.0	584.8	61.5%

Source: SGS 2012 p. 65

Table 3-6 Estimate of Sydney's human capital (\$ billions)

	1996	2001	2006	Growth 1996–2006
<b>Males</b>				
Higher degree	39.2	53.1	75.9	93.6%
Bachelor degree	140.0	183.4	230.6	64.7%
Skilled labour	45.6	51.1	63.4	39.0%
Unqualified	276.1	317.0	445.2	61.2%
Total	500.9	604.7	815.1	62.7%
<b>Females</b>				
Higher degree	18.0	31.1	54.5	202.8%
Bachelor degree	95.0	143.2	196.9	107.3%
Skilled labour	47.1	49.0	62.1	31.8%
Unqualified	271.4	279.1	328.2	20.9%
Total	431.4	502.4	641.7	48.7%

Source: SGS 2012 p. 79



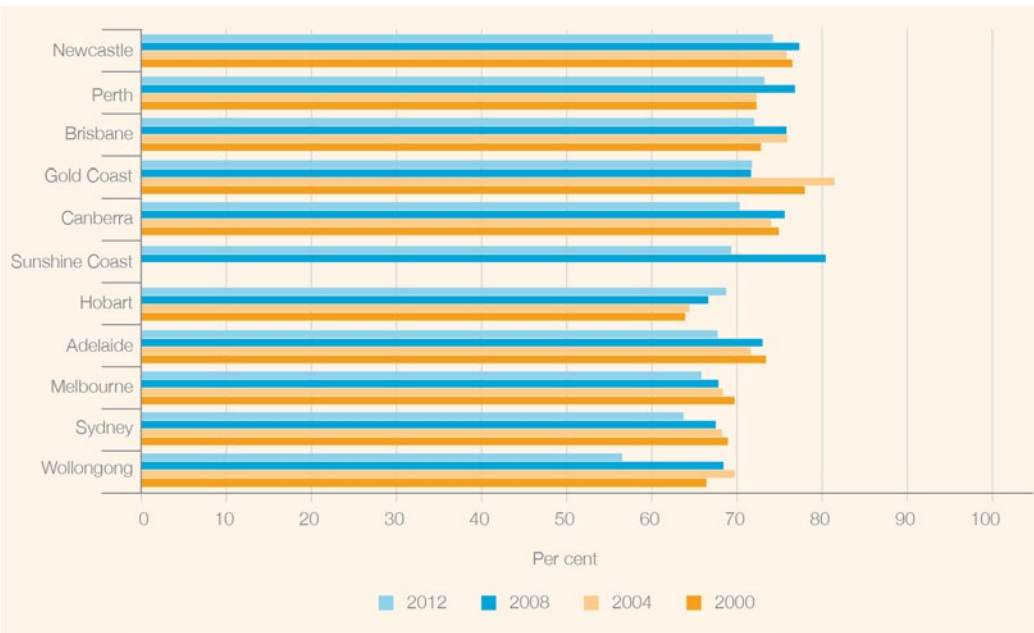
## Labour force participation by age and gender

### Labour force participation rates for those aged 15 to 24

Many young adults aged 15 to 24 years participate in full-time education or training. This reduces their participation in the workforce, although many combine study or training with part-time or casual work. The proportion of young adults involved in full-time education or training has been rising in recent decades and has delayed many entering the workforce, particularly in a full-time capacity. Young adults are choosing to stay in full-time education and training for longer, aligning with the trend of the Australian workforce experiencing an increase in skill and education levels.

The participation rates for this age cohort ranges considerably as shown in Figures 3-37 and 3-38.

**Figure 3-37** Labour force participation rates for 15 to 24 year old males for selected major cities

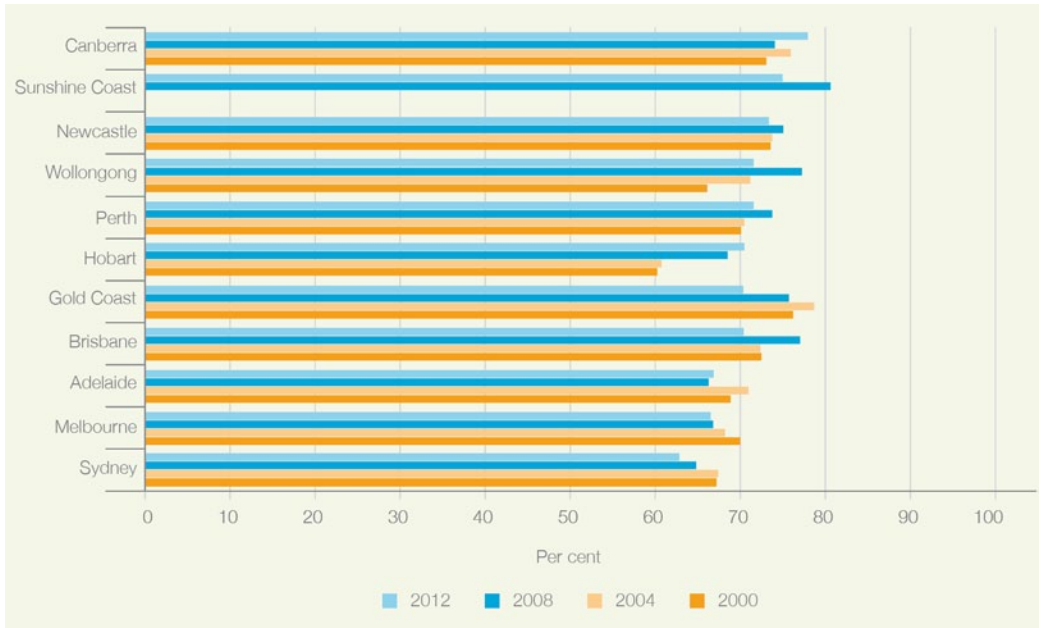


Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

Labour force participation is similar for men and women in this age group. Differences begin to emerge when they reach an age where child bearing and rearing become common. Cities of note are Wollongong and the Sunshine Coast, which experienced a drop of greater than 10 per cent in their participation rates for young males between 2008 and 2012. Wollongong, the Sunshine Coast and Brisbane all experienced a fall in the participation rate of young females between 2008 and 2012 of more than five per cent. Hobart is the only city to have substantial gains in the participation of its young people between 2000 and 2012, with a nearly five per cent increase for males and more than double that for females.

**Figure 3-38** Labour force participation rates for 15 to 24 year old females for selected major cities



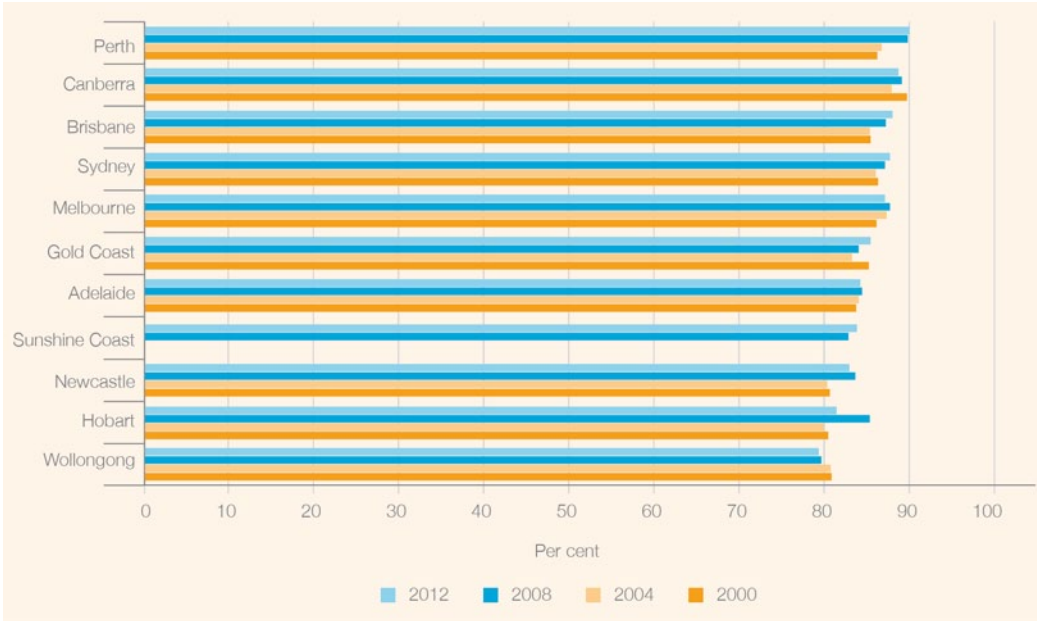
Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

### Labour force participation rates for those aged 25 to 64

The 25 to 64 year old age group is the largest and most significant contributor to the labour force in Australia. There is a notable difference between male and female labour force participation rates for this age group. Figure 3-39 shows that the 2012 labour force participation rate for males across the major cities for which data is available ranges from just under 80 per cent for males to just over 90 per cent. The participation rate for females ranges from 63 to 73 per cent. Canberra is an exception, with a female participation rate of just under 80 per cent.

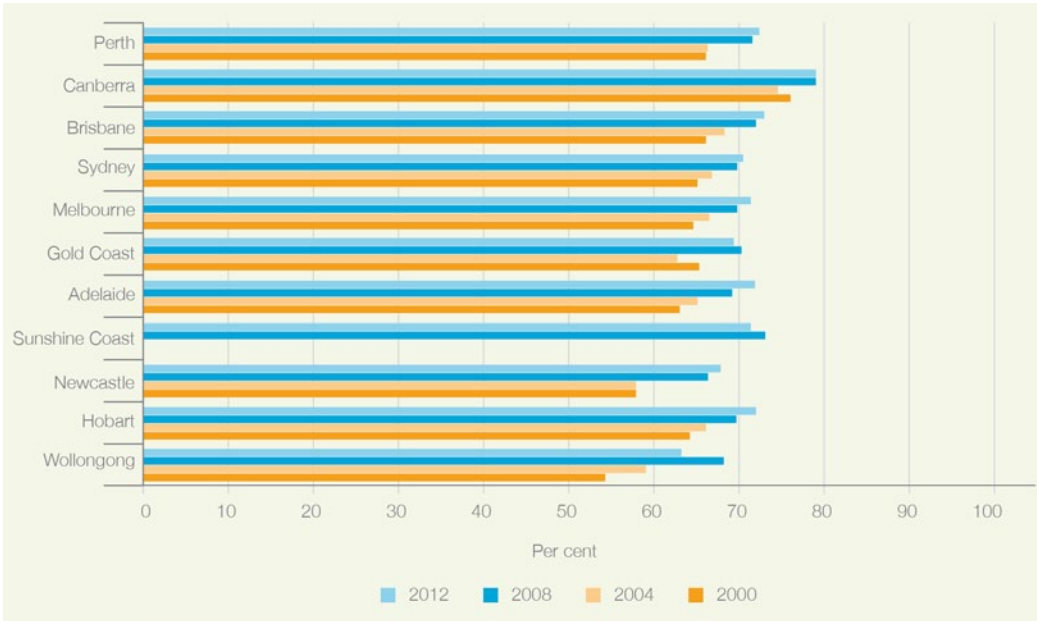
Figure 3-39 Labour force participation rates for 25 to 64 year old males for selected major cities



Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

Figure 3-40 Labour force participation rates for 25 to 64 year old females for selected major cities



Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

Figure 3-40 shows that while male participation rates have increased slightly since 2000 for most major cities, all the major cities for which there is data have experienced substantial increases in their female participation rates. On average, there has been a 6.8 per cent rise in the participation rate of females between 2000 and 2012, compared to only a one per cent rise for males.

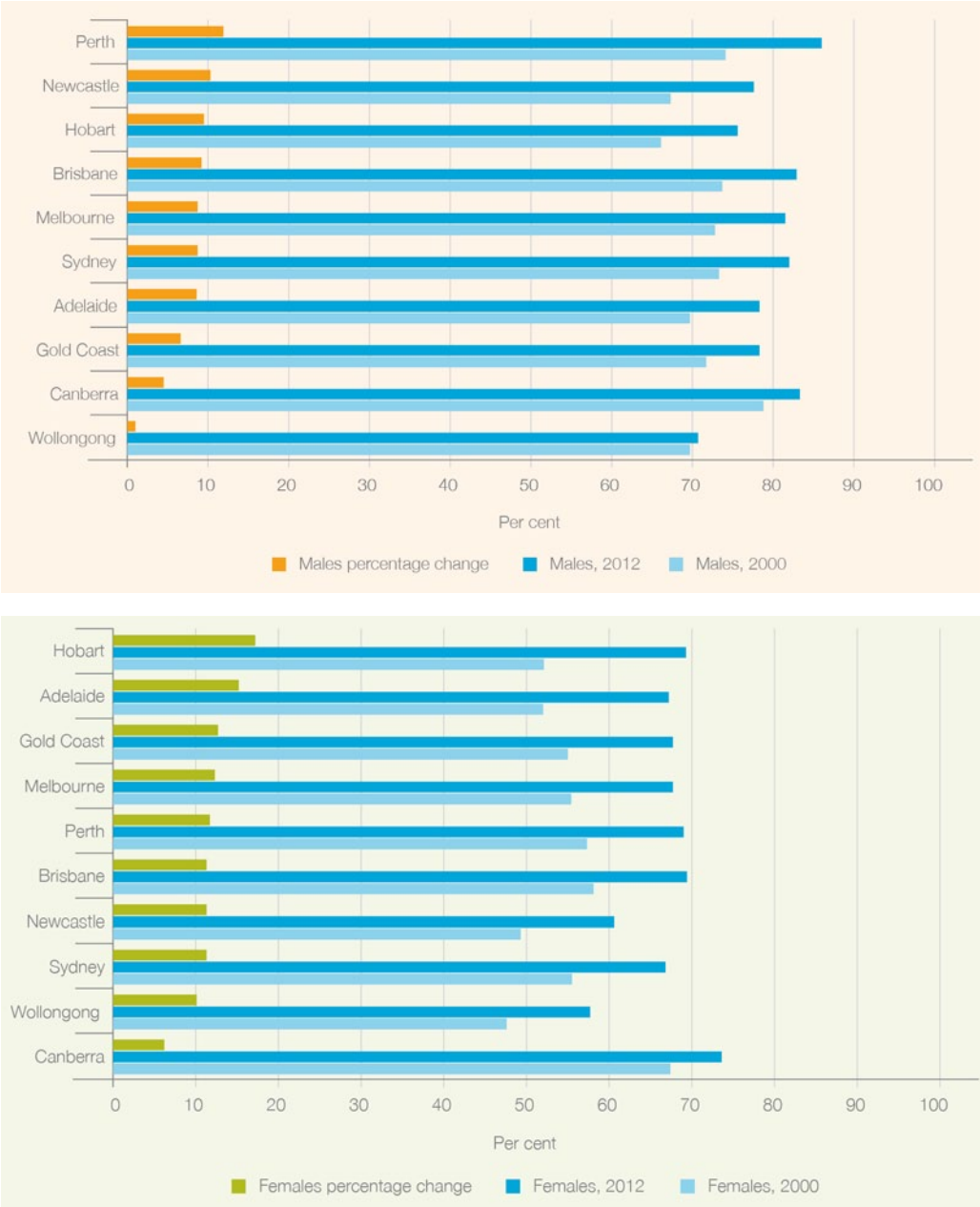
The increase in female participation has been largely driven by women aged 45 to 64, with their contribution to the total hours worked by Australians of working age jumping from 6 to 15 per cent over past 30 years. This significant increase is mainly due to a steady increase of women in this age group participating in the workforce, but also in part due to the ageing of the workforce resulting in women in this age group making up a greater proportion of the total working age population (Gilfillan and Andrews 2010).

Figure 3-41 highlights that participation rates for the 45 to 64 year old age cohort have increased dramatically since 2000 across Australia's major cities, particularly for women. Hobart and Adelaide are standouts for increases in female participation in this age category, both rising by more than 15 per cent. Newcastle and Perth are standout cities for increases in male participation for this age cohort, both experiencing increases of over 10 per cent since 2000.

*Noosa, Sunshine Coast, Queensland.*



Figure 3-41 (a) and (b) Changes to labour force participation rates for 45 to 64 year olds by gender for selected major cities 2000–12



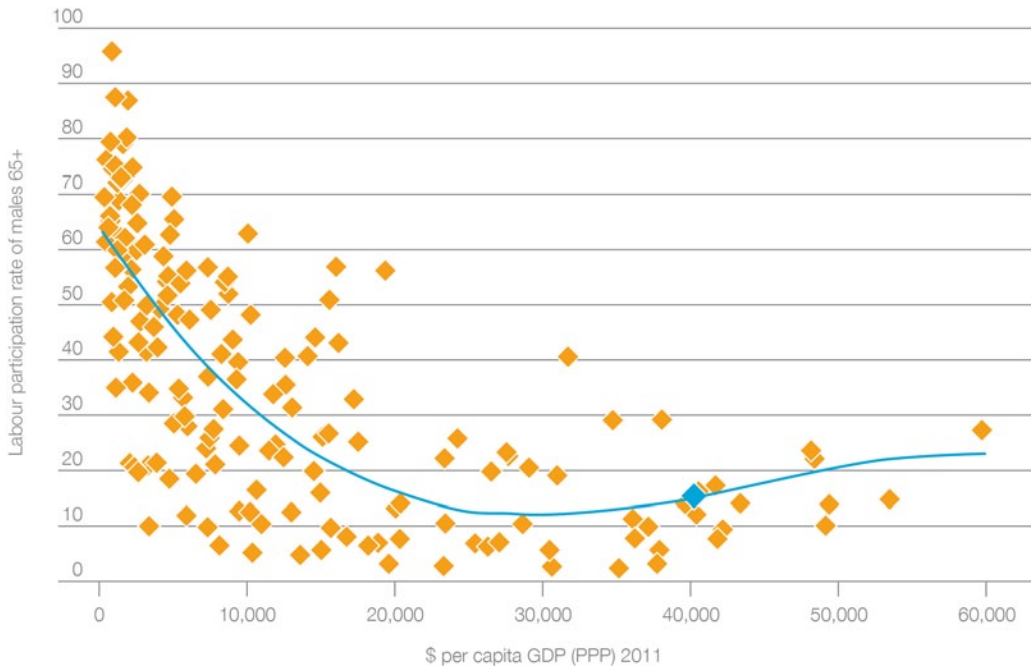
Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

The trend of increase in the labour force participation of older women is likely to continue. The longer a woman has been engaged in the labour force, the more likely she is to stay in it (Gilfillan and Andrews 2010, p. XIV). Younger women today have higher levels of education and greater engagement with the labour force than the generations before them. It is therefore likely that the participation rates for mature-aged women will continue to rise as younger women age.

### Labour force participation rates for those 65 years of age and over

Figure 3-42 International relationships between GDP per capita and workforce participation rates for males 65 years of age and over

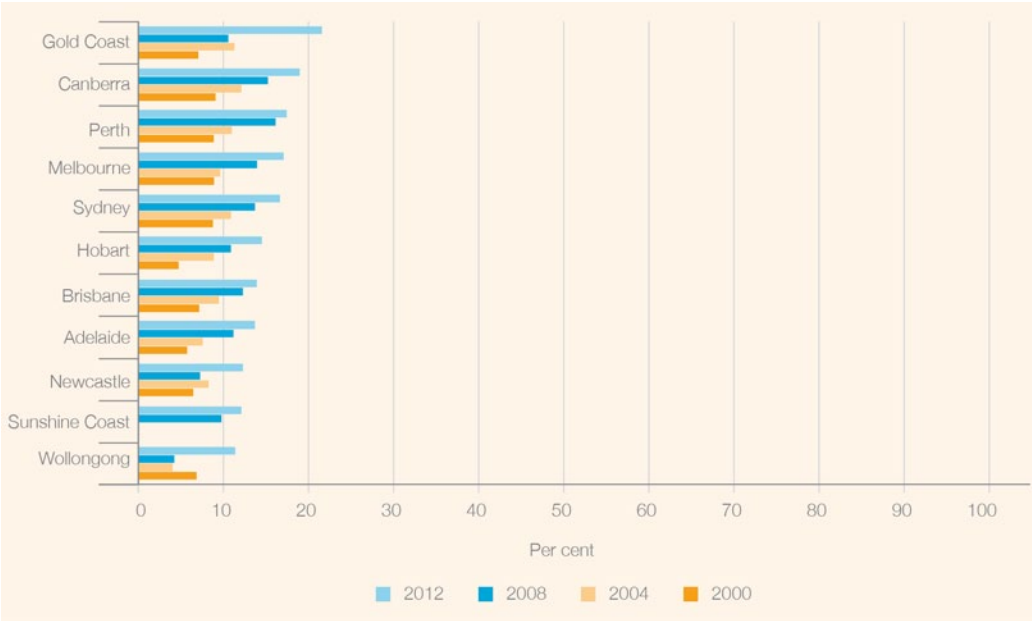


Note: Australia represented by large blue dot.

Source: From Lattimore 2012 reproduced by kind permission of the author

Lattimore (2012) surveyed international data on participation rates and found that as per capita incomes rose (also associated with improved health and education), the participation rates of those aged 65 and older fell steeply. However, as incomes continued to rise the trend was reversed, with participation rates of older workers increasing (Figure 3-42). This would suggest that Australia is likely to see increasing participation rates of older workers as per capita income rises.

Figure 3-43      Labour force participation rates for males 65 years of age and over for selected major cities

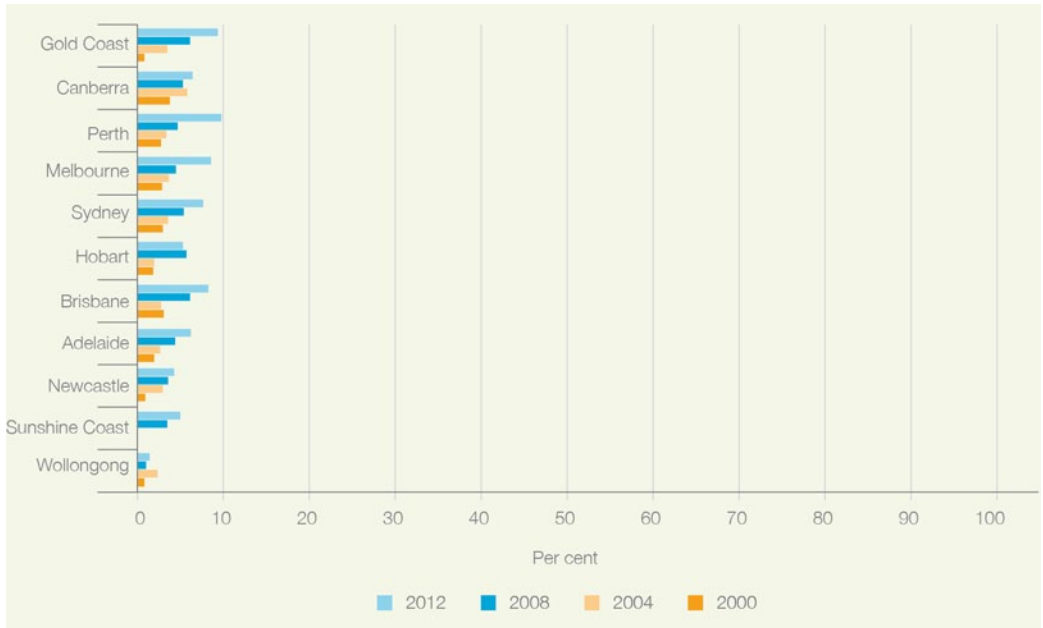


Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

All major cities for which data is available have experienced a remarkable increase in participation rates in the 65 years and over age group between 2000 and 2012 (Figures 3-43 and 3-44). However, some cities have experienced standout rates of growth since 2008. The Gold Coast and Wollongong experienced an increase in male participation of greater than seven per cent and Perth and Melbourne experienced an increase in female participation of greater than four per cent. The trend of increased participation in this age group is set to continue, with Australians indicating that they intend to work for longer and retire later in life than in the previous decade (Australian Human Rights Commission 2012).

**Figure 3-44** Labour force participation rates for females 65 years of age and over for selected major cities



Note: Projection for 2012. Data not available for Sunshine Coast 2000 and 2004. Canberra does not include Queanbeyan.

Source: Derived from ABS 2012d

Female participation rates for those aged 65 and over are still well behind male rates. Additionally, female participation rates in this cohort have been growing at almost half that of the male rates since 2000. In the longer term this may change, as women with a greater attachment to the workforce reach this age.



## Conclusion

The previous chapter looked at the age structure of Australia's major cities and concluded that there is an ageing trend in the population that in the absence of mitigating factors will lead to a drop in living standards as the number of working age people fall as a proportion of the population. There are two ways to offset this. The first is to ensure that those working are more productive. The first section of this chapter discussed the role of an economically productive spatial layout of the city (its industrial geography) and the associated transport networks in increasing the productivities of cities.

The second way of offsetting the effects on living standards of an ageing population is to increase workforce participation rates. Here, there are encouraging signs. Workforce participation rates in cities are generally rising, being driven for the most part by the increasing number of women entering the paid workforce. Not only are more women now working but also their human capital is increasing, meaning that their value to the Australian workforce is rising in both quality and quantity.

These trends are gradual. It has taken 25 years to narrow the gap between male and female participation from 25 per cent to 13 per cent. The gap in human capital, while narrowing, is still significant.

This section has also highlighted the gap in participation between the capital and non-capital major cities. Unlike the narrowing of the gender gap, this gap is much the same in 2012 as it was 14 years ago. Since two and a half million Australians live in non-capital cities, this represents a large pool of underutilised human capital.

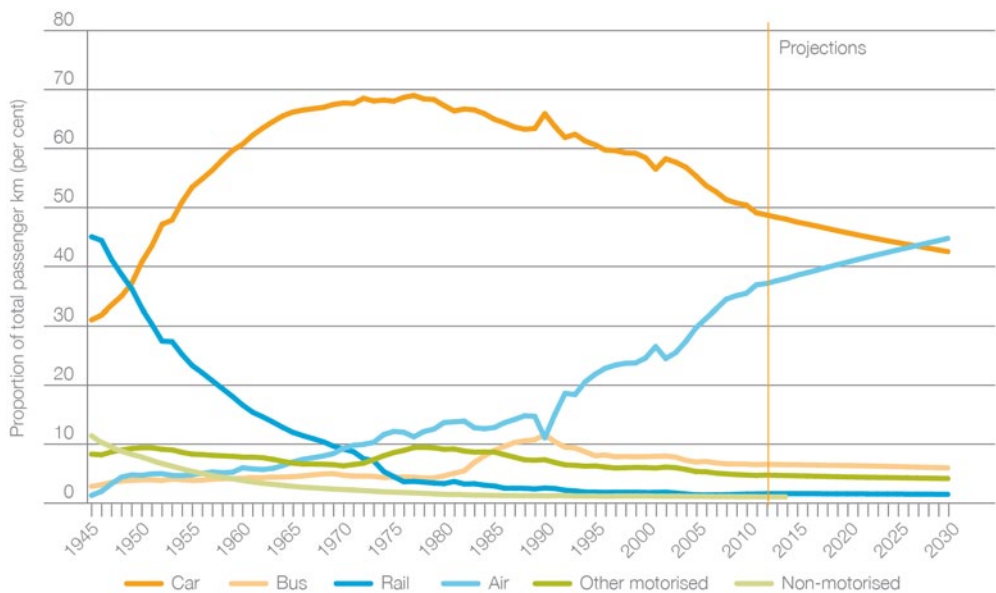
One of the highlights for productivity of the survey of workforce participation is the increase in participation rates of those over 65. People entering this age group now do so with better health and education than their predecessors and perhaps a greater expectation of maintaining a standard of living. It is likely that the proportion of older workers in the workforce will continue to grow.

While the above should not diminish the seriousness of the challenge of an ageing population detailed in the Intergenerational Reports (Australian Government 2010) it does suggest that, for major cities at least, there are mitigating factors.

## Major city airports and airline travel

Current trends predict that, within major city urban areas, private vehicles will remain the dominant mode of transport in and around the city in the foreseeable future. Longer-distance inter-urban travel, including travel between major cities, is also of relevance. Inter-urban travel shows a general shift to air travel similar to the historical shift from rail to private vehicles in the 1950s (Cosgrove 2008). Private vehicles remain the preferred mode of transport and still account for the largest proportion of passenger vehicle kilometres travelled outside the major cities. However, trends indicate a continued decrease in private vehicle travel and a continued increase in air travel passenger vehicle kilometres (Cosgrove 2008, pp. 6–7). Figure 3-45 shows the modal share of Australian non-urban passenger travel and it can be inferred that the majority of these air movements are between the major cities.

Figure 3-45 Modal share of Australian non-urban passenger travel 1945–2030

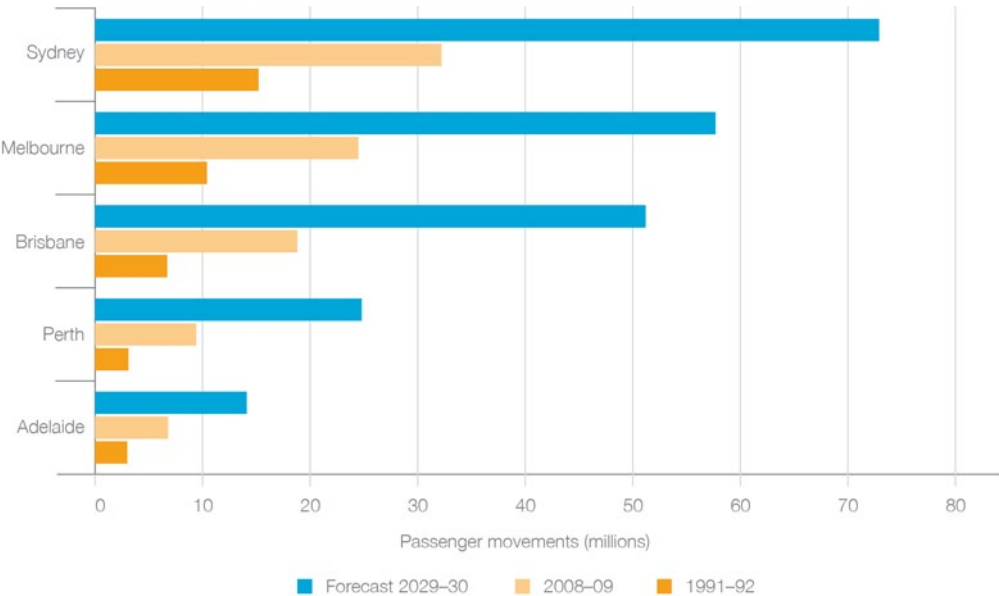


Note: The graph is based on all non-urban passenger travel in Australia. It can be assumed that about 84 per cent of trips represented will be between major cities based on the fact that the eight capital city airports as well as Cairns and the Gold Coast collectively account for this proportion of passenger movements.

Source: Updated figures from Cosgrove 2011, p. 3

Australia's airports constitute major hubs of economic infrastructure driving income, investment and employment in the major cities. The sum total of the economic value of the largest six airports in Australia has been estimated at \$25 billion per annum, accounting for approximately 2 per cent of Australia's total GDP (Tourism & Transport Forum and Booz & Company 2012, p. 6). Airports generate employment both directly and indirectly and it is estimated that 1000 jobs are created for every one million air passengers (Steering Committee Overseeing the Joint Study on Aviation Capacity in the Sydney Region 2012).

Figure 3-46 Forecast passenger movements 2029–30



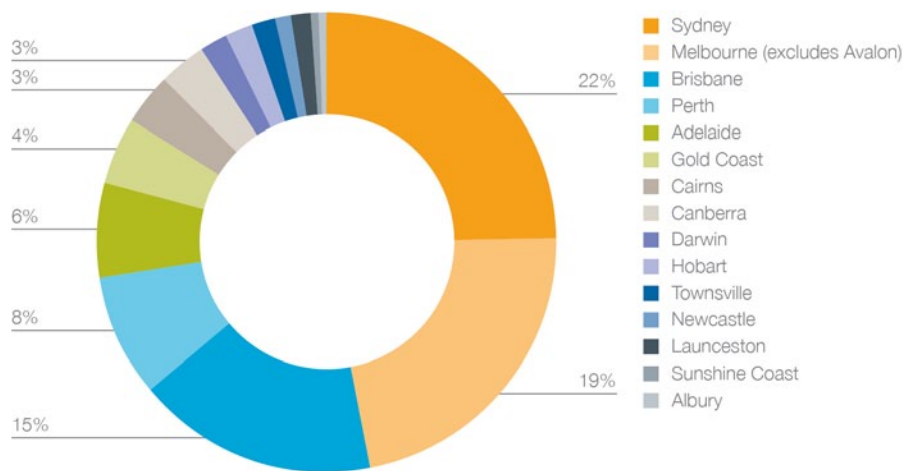
Source: Productivity Commission (2011)

The Productivity Commission report (2011) on Australia’s major airports indicates that passenger numbers in Australia are expected to double between 2009–10 and 2029–30, with Brisbane, Melbourne and Sydney airports each expected to cater for over 50 million passengers by 2029–30 (Figure 3-46).

Australia is particularly suited to domestic air travel, with our predominantly urban concentrations distributed over a vast continent. Domestic passenger movements between Australia’s major cities are significant even by global standards, with the Sydney to Melbourne air route ranking as the third busiest air route in the world and the Brisbane to Sydney air route as the 17th busiest air route in the world (BITRE, based on world-wide airline schedule data from OAG MAX for month of July 2012). Figure 3-47 shows the share of domestic passenger movements from Australian major city airports.

Airports in the eight capital cities as well as Cairns and Gold Coast collectively accounted for 77.4 per cent of all domestic passenger movements in 2011–12. Of the capital city airports, Perth recorded the largest increase in domestic passenger movements compared to the previous year with 11.5 per cent followed by Brisbane with 4.3 per cent. The other capital city airports recorded negative growth compared to the previous year (BITRE 2012i).

Figure 3-47      Share of domestic passenger movements 2010–11



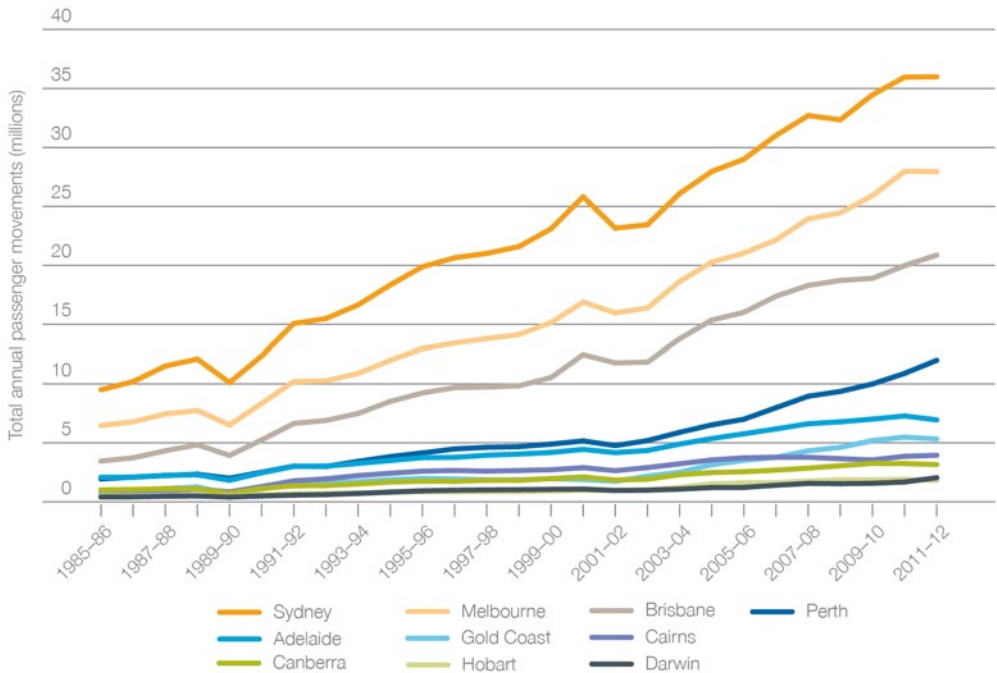
Source: BITRE 2011a

Ten Australian major city airports (the eight capital cities as well as Cairns and the Gold Coast) collectively account for 77.4 per cent of all domestic passenger movements (BITRE 2011b, Figure 3-47).

Melbourne Airport Terminal at Sunrise.

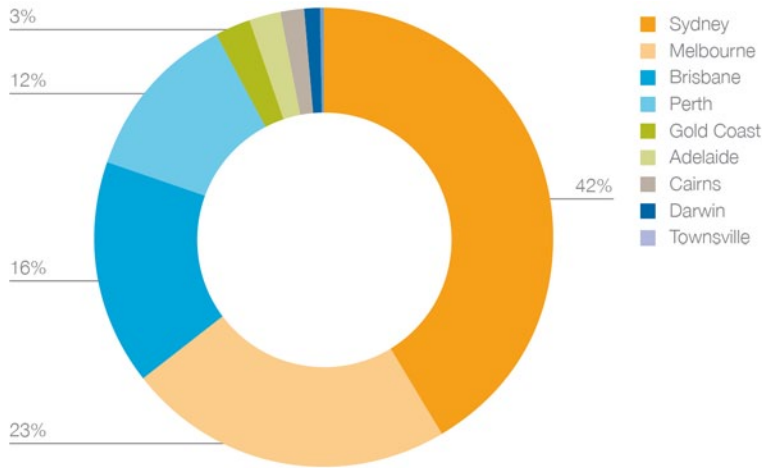


Figure 3-48 Total annual passenger movements 1985–86 to 2011–12



Source: BITRE 2012b, 2012c

The 10 most used airports in Australia experienced mixed growth trends in passenger movements during 2011–12 (Figure 3-48). Growth was most notable in Darwin (21.7 per cent) as well as in Perth (10.2 per cent), Brisbane (4.5 per cent) and Cairns (2.2 per cent). Passenger numbers were flat in Sydney (0.08 per cent) and Melbourne (-0.02 per cent). Some decreases were seen in Canberra (-2.5 per cent) and the Gold Coast (-2.9 per cent), while stronger decreases were recorded for Adelaide (-4.6 per cent) and Hobart (-4.7 per cent).

**Figure 3-49** Share of international passenger movements 2010–11

Source: BITRE 2011a

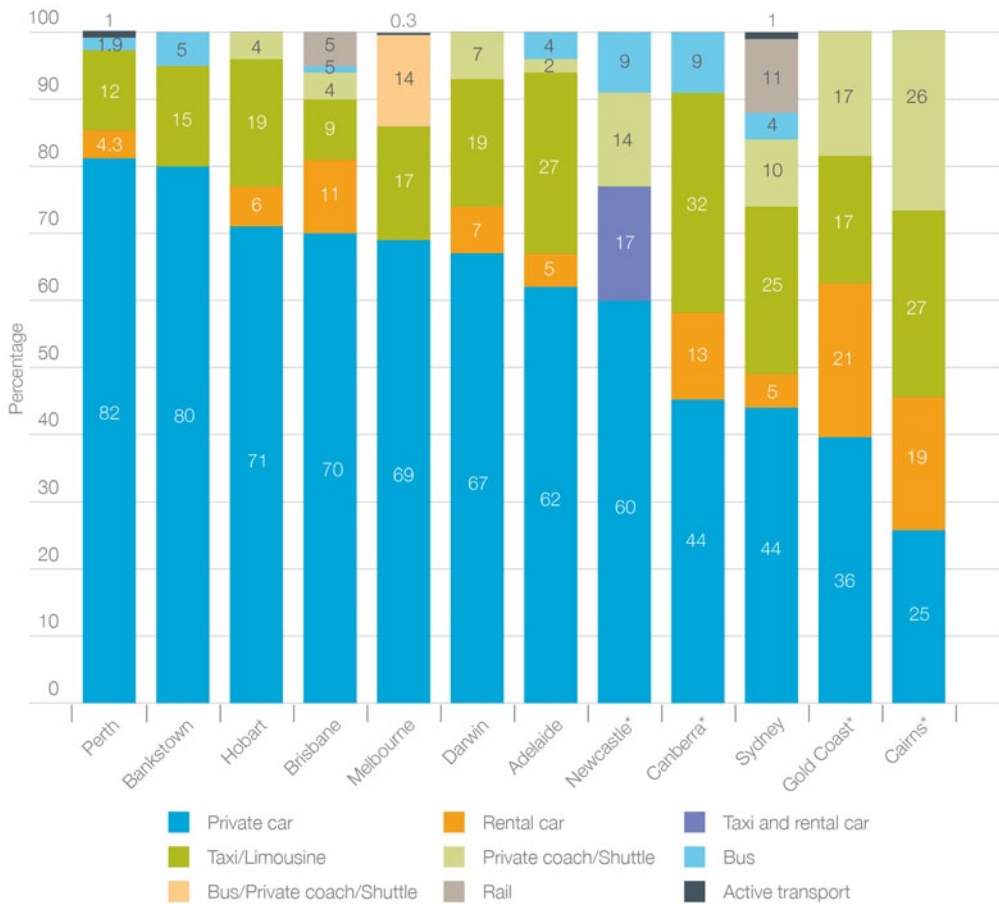
In 2011–12, international passenger movements grew at all major city airports except for the Gold Coast (-6.1 per cent), Cairns (-1.3 per cent) and Townsville where scheduled services ceased in October 2011 (BITRE 2012h).

Kingsford Smith currently services 40 international destinations and is by far the busiest international airport in Australia, accounting for over 42 per cent of all international passenger movements. (Figure 3-49). As well as catering for Sydney's population, the airport also acts as an international connection point for passengers from Canberra (65 per cent), Adelaide (22 per cent), Brisbane (nine per cent) and Perth (five per cent) (Steering Committee Overseeing the Joint Study on Aviation Capacity in the Sydney Region 2012). Also accounting for a large proportion of international passenger movements are Melbourne (23 per cent), Brisbane (16 per cent) and Perth (12 per cent). The remaining international airports made up a little over seven per cent of international passenger movements in 2011–12 (BITRE 2011c, 2012h).

International air freight is also an important sector of the aviation industry. The majority of freight is carried in the cargo hold of passenger aircraft, although some dedicated freight services fly out of Sydney and Melbourne. While air freight represents one-tenth of a per cent of total Australian international trade by volume, it represents 24 per cent of Australia's total international trade by value (Steering Committee Overseeing the Joint Study on Aviation Capacity in the Sydney Region 2012, p. 89).

Increasingly, airports are diversifying the services and facilities on airport land to include non-airport-related services. Some of these, such as freight forwarding businesses and hotels, have an obvious relationship with air transport. Other non-aviation developments, such as shopping centres, supermarkets, distribution centres and office buildings, are increasing in number – in particular at Melbourne, Brisbane, Perth and Canberra airports. These non-aviation activities have consequences for land access and congestion in and around airport precincts (Productivity Commission 2011).

Figure 3-50 Mode of travel to airports 2010



Note: Mode share does not equal 100 per cent due to rounding. In addition, Gold Coast figures were calculated with reference to base patronage that includes transfer passengers not using ground transport. For Melbourne, private car share includes drop-off and pick-up, onsite and offsite parking and rental car shares. Private car mode for Perth includes drop-off and pick-up, onsite and offsite parking, fast-track and valet parking. Newcastle mode share consists only of the Greater Newcastle mode splits. Sydney 'Private Coach/Shuttle Services' share refers to minibus service. Perth bus mode share data represents public transport mode share to the domestic terminal only.

Source: Tourism & Transport Forum and Booz & Company 2012, p. 15. Reproduced by kind permission of Booz & Company



The predominant mode of transport to major Australian airports remains by private car, ranging from 45 per cent of all trips to and from Sydney airport to 81 per cent of all trips to and from Perth domestic airport (Productivity Commission 2011). There is growing pressure on road infrastructure surrounding major city airports from both airport-related and non-airport-related traffic. This is leading to heavy congestion at peak times, impeding timely access to and from airports and consequently reducing productivity. Sydney, Perth, Brisbane and Melbourne airports are particularly affected by traffic congestion (Productivity Commission 2011). In response to this a number of cities are upgrading road infrastructure – for example, Perth’s Gateway WA project to upgrade roads surrounding Perth airport and Brisbane’s Airport Link tunnel (Department of Infrastructure and Transport 2012, Department of Transport and Main Roads 2012, Department of Transport 2012).

Public transport travel to airports is a relatively small proportion of all trips. Sydney and Brisbane airport are the only Australian airports that have passenger rail links, although the transport mode share is relatively modest, with 14 per cent of passengers travelling to or from Sydney airport by rail and five per cent of passengers travelling to or from Brisbane airport by rail (Productivity Commission 2011). Both the Sydney and Brisbane airport stations are privately owned and operated, with the Brisbane Airtrain also owning and operating the railway track. Both services are currently returning profits (Brisbane Airtrain 2012, Sydney Airport Link 2012).

*Over the top, Kingford Smith Airport, Sydney.*





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A primary goal of the National Urban Policy is to advance the sustainability of Australia's natural and built environment, including through better resource and risk management. In working towards this goal there are four interrelated objectives:

- Protect and sustain our natural and built environments
- Reduce greenhouse gas emissions and improve air quality
- Manage our resources sustainably
- Increase resilience to climate change, emergency events and natural hazards.

In this chapter we look less at the resources we consume in our cities than at the positive role our urban systems can play in protecting and contributing to natural systems and at how our natural environment impacts on and integrates into the urban fabric. The chapter discusses the potential to ameliorate the urban heat island effect, urban waterway management issues, the state of key natural resources and how cities are challenged by ongoing climate changes and bushfire risk. The chapter showcases several examples of cities' efforts to adapt to increasing temperatures and reduce greenhouse gas emissions.

There is evidence of increasing average temperatures and decreasing rainfall in most of Australian cities. They are vulnerable to heatwaves, bushfires, storms, floods and sea level rise, all of which are predicted to become more prevalent in coming decades. In addition, city growth puts pressure on ecosystems and resources. These issues are starting to be managed in an integrated natural and urban systems management framework, particularly regarding water sensitive research and development, and urban heat island and green infrastructure management. The management of sea level rise impacts on our coastal major cities at state/territory and local government levels is progressing to varying extents. Positive steps are being taken by state governments following the release of recommended actions by the 2009 Victorian Bushfires Royal Commission and there is now a nationally agreed policy framework to address bushfire arson in Australia. Various cities are exploring avenues of climate change mitigation and more efficient use of energy by investing in renewable energy projects.



## Summary indicators

Dimension	Indicators
Temperature/rainfall	City annual average daily temperature 1952–2011 City annual average rainfall 1952–2011 Australian temperature anomaly 1910–2010 and 11-year moving average
Coastal vulnerability	Observed sea level rise 1993–2011 Threatened species
City edge vulnerability	Percentage of buildings close to bushland Incidence of arson-related vegetation fires 2002–08 Urban surface water quality Food security Threatened species Water-sensitive cities management
Climate change mitigation	Number of Green Star buildings Low carbon precinct-based distributed energy generation projects
Climate change adaptation	State and local government adaptation strategies and plans Precinct-based distributed energy generation projects Green infrastructure management
Energy	Electricity consumption 1974–75 to 2009–10 Gas consumption
Biodiversity conservation	Threatened, endangered and vulnerable species in the metropolitan region
Agricultural production	Metropolitan region's contribution to state agricultural production

## Key findings

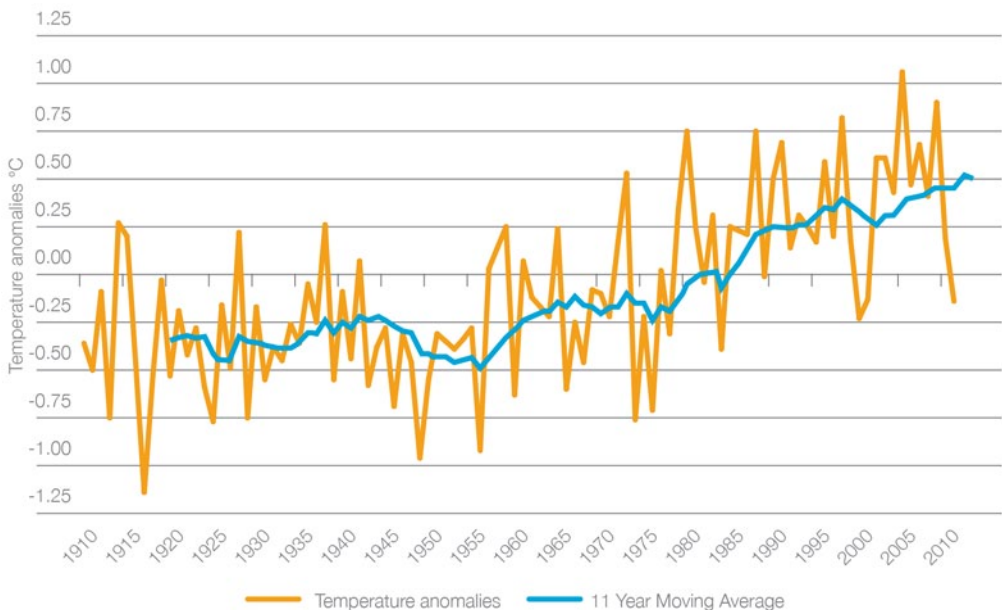
- Australia's major cities since 1952 have experienced increases in average maximum temperatures of up to 2°C.
- Most Australian cities, except for those located in the far north, have experienced declines in annual rainfall over the last 60 years.
- The management of sea level rise impacts in our coastal major cities at state/territory and local government levels is progressing to varying extents.
- Increasing prevalence and severity of natural perils have natural regional differences, giving rise to varying costs and losses – for example, Sydney has a historically very high prevalence of hailstorm damage.
- The number of very high and extreme fire weather days is estimated to increase by between 15 and 60 per cent by 2020 and double to quadruple by 2050.
- It is reported that 65 per cent of Australian superannuation investment fund managers have not recognised the impacts climate change will have on investment portfolios. Similarly 83 per cent of superfunds replied in a key survey, 'no' to the question 'do you believe that systemic risks like climate change are currently being priced into asset valuations properly?'.

- It is estimated that about 490,000 or six per cent of addresses in capital cities are within 100 metres of substantial bushland. Over 750,000 are within 200 metres, posing substantial risks of property loss from bushfire.
- The fresh food production on the fringes of our cities plays a key role in providing staple perishable vegetables. These areas are under threat from the outward expansion and economic pressures of our cities.
- Our cities continue to place high biodiversity pressures on urban waterways and estuarine environments, many of which contain sites of international heritage significance.
- Proper management of natural systems and 'green infrastructure' can make major contributions to the sustainability and liveability of our cities.
- Total open space in and around our cities can amount to 60 per cent of the urban area.
- Local, state and territory governments are moving to better manage natural and urban systems and are addressing challenges such as urban heat islands, cleaning waterways and more sustainable buildings.

## Temperature and rainfall changes

The Bureau of Meteorology's *State of the Climate 2012* repeats the finding of the previous *State of the Climate* report in 2010 that Australia's climate is highly variable, with evidence growing that land and ocean temperatures are increasing and rainfall distribution patterns are changing. The report concludes that the long-term warming trend for Australia and the globe has not changed, despite 2010 and 2011 being Australia's coolest years since 2001: the world's 13 warmest years on record have all occurred in the past 15 years (Bureau of Meteorology 2012).

Figure 4-1 Changes in average temperature for Australia for each year and the 11-year moving average



Note: Anomalies are the departure from the 1961–90 average climatological period.

Source: CSIRO 2012



As represented in Figure 4-3, in general terms, Australia's major cities since 1960 have experienced increases in average daily temperatures of between 0.4 and 0.8°C (Bureau of Meteorology 2012). Changes in average temperature for Australia for each year and decade are shown in Figure 4-1, demonstrating a clear nation-wide increase in average temperatures, particularly since the 1980s. There has been an increase in record hot days and a decrease in record cold days, the former associated with some serious heatwave and bushfire events, as reported in *State of Australian Cities 2011*. Climate change is also associated with more extreme events. For example, in 2011 Perth experienced a total of 50 days over 35°C, being the peak of a three-year spike of hot weather, and since 2009 the number of days over 35°C eclipsed the previous total of 35 days in 2004 (Figure 4-2). However, until 2009 the number of days above 35°C in Perth since 1982 stayed roughly within the same bounds of between about 20 and 30 days per year over a four year cycle.

Figure 4-2      Number of days in Perth over 35°C 1982–2012



Source: Data from Bureau of Meteorology

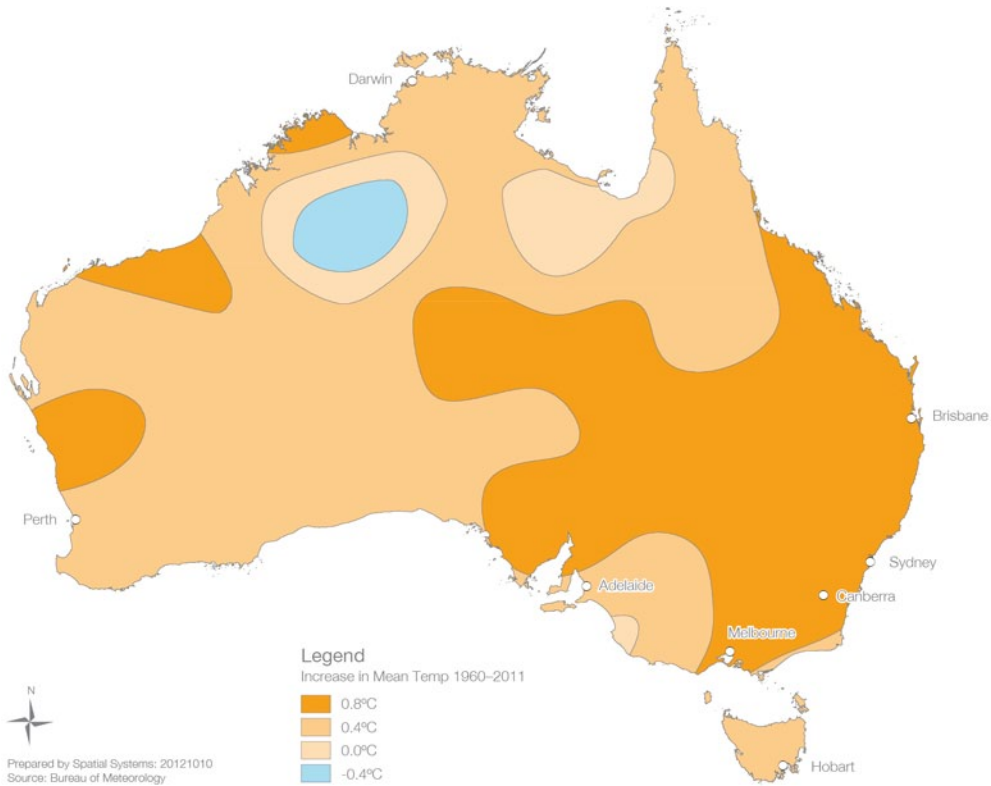
It is not only increasing extreme heat events that are associated with climate change in Australia; there is also a possible link with heavy rainfall events. The Climate Commission notes that the record high sea surface temperatures around northern Australia in spring and early summer 2010 and 2011 were likely to have contributed to the heavy rainfall over much of Australia in the past two years (Climate Commission 2012). Further research is still being conducted in this area, including the role that increased evaporation from higher sea surface temperatures played in the intensity of the flooding that occurred in Brisbane in 2009–11.

As reported in *State of Australian Cities 2011*, a future with more frequent and intense rainfall events would have major impacts on Australia's cities (particularly in northern Australia), including for transport systems and essential services. In addition to an increased prevalence of floods in coastal plain river cities such as Brisbane, intense rain and hail storms can cause flash floods and wind-related physical damage over very short periods of time. The flash floods that hit Toowoomba in January 2011 and Sydney in March 2012 caused road closures and traffic chaos. In Sydney public transport was affected during these episodes. There were

delays on seven of 16 rail lines, ferries were cancelled and bus routes were affected by road closures. Power was lost to about 2,000 homes and businesses in Sydney and damage is estimated to have been in excess of \$500 million (Climate Commission 2012).

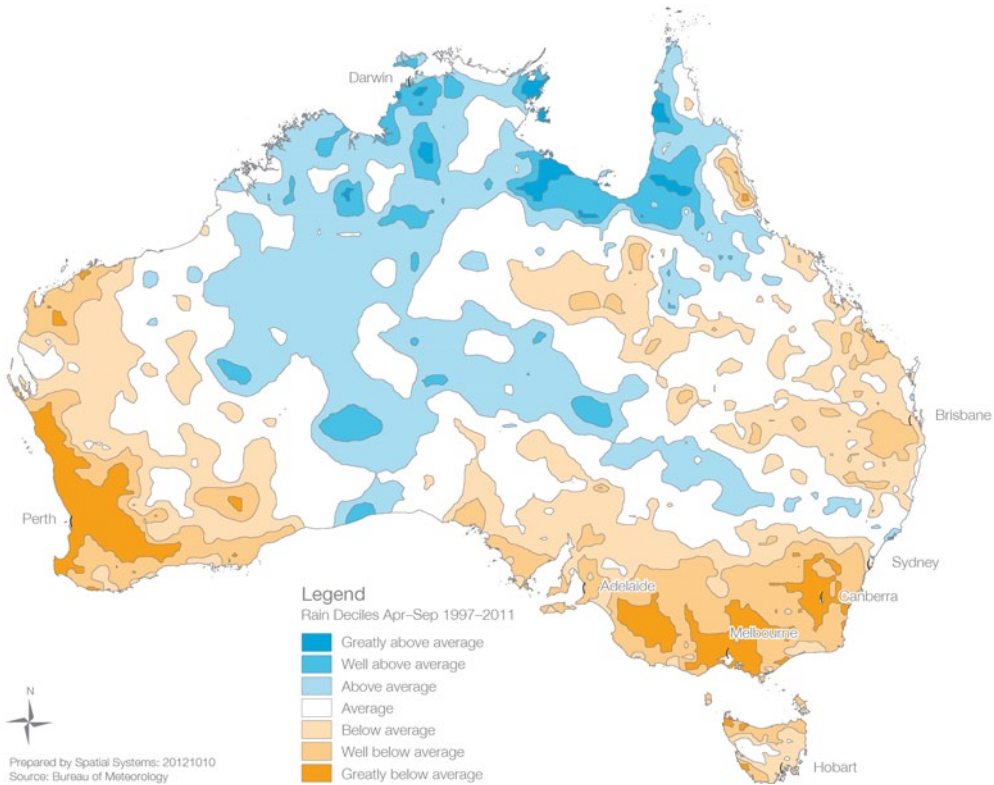
Figure 4-3 and Figure 4-4 illustrate the broad changes in temperature and rainfall across Australia. Figure 4-3 reflects the increasing temperature anomalies shown in Figure 4-1 as well as those for each city below. Interestingly, parts of the Kimberley show a cooling trend. Figure 4-4 also shows rainfall averages over the previous 15 years compared with the average since 1900. Parts of the north of the continent are receiving above average rainfall, whereas much of the south and east of Australia have recorded below average rainfall – for several major cities, the lowest on record.

Figure 4-3      Change in average daily mean temperature from 1960 to 2011



Source: CSIRO 2012 using Bureau of Meteorology data

Figure 4-4 April to September rainfall deciles from 1997 to 2011



Note: Decile rainfall maps show where rainfall is above average, average or below average for the most recent 15-year period in comparison with the entire rainfall record from 1900. Areas of highest and lowest rainfall on record are also shown.

Source: CSIRO 2012 using Bureau of Meteorology data

## Temperature and rainfall trends in Australia's major cities 1952–2011

Long-term trends in the Bureau of Meteorology's weather observations for Australia's major cities over the past 60 years clearly show increases in average temperatures for most cities and decreases in average rainfall over all non-tropical cities. Small increases in long-term averages mean that there can be significant changes to normal climate variability at a local level from year to year. This section summarises long-term overall trends in temperature and rainfall, which is not to imply that future climate change will necessarily be a gradual trend along the same lines. Uncertainties inherent in climate change mean that within an overall smooth long-term trend, sudden changes can occur in steps as 'tipping points' are reached. This has implications for decision makers helping communities adapt to climate change. The discussion in this section is based on the graphs on the following pages, in which minimum temperatures are represented by darker lines and maximum temperatures are shown by lighter lines.

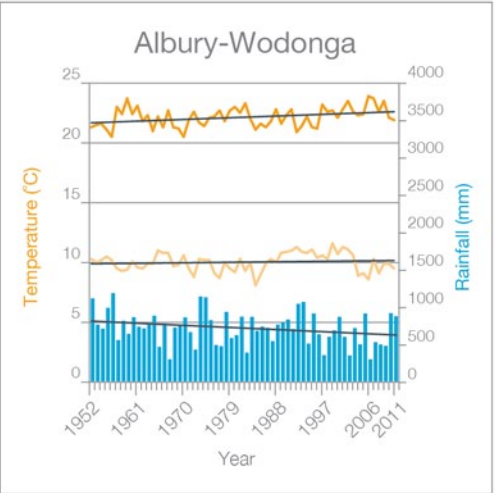
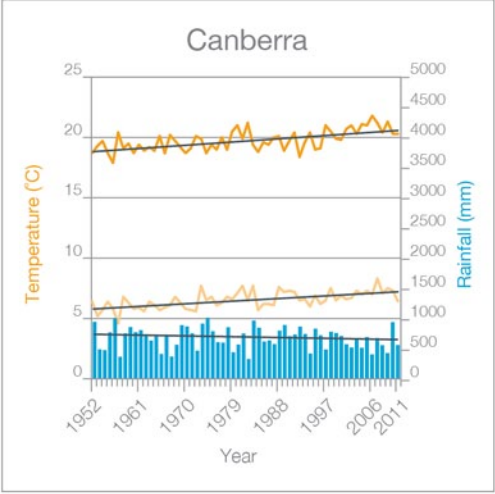
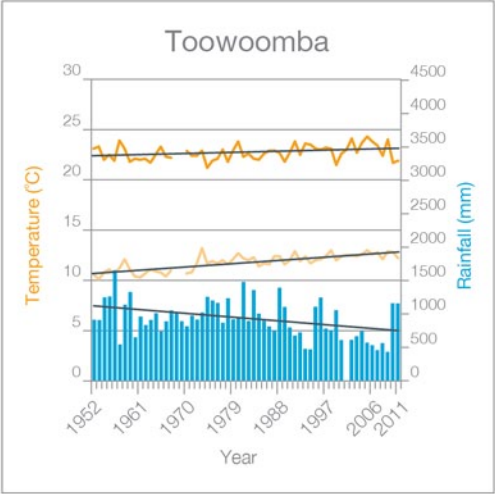
## Increasing temperature, decreasing rain

In general, inland major cities (including Toowoomba, Canberra and Albury-Wodonga) are recording larger increases in average temperature and decreases in rainfall than major cities in coastal zones. Toowoomba shows the highest rate of rainfall decrease of all major cities, dropping from an annual average of 1,113 mm in 1952 to 744 mm in 2011, a 33 per cent drop. Five other major cities experienced average rainfall reductions of 20 per cent or more in the past 60 years: Perth, Melbourne, Hobart, Geelong and Albury-Wodonga.

Toowoomba, Melbourne and Canberra had the highest rates of increase in annual average minimum temperatures, rising by between 1.4 and 2.1 degrees from 1952 to 2011. In Geelong, Canberra and Perth, average maximum temperatures have increased the most, by 2.0°C, 1.7°C and 1.7°C respectively.

## Increasing rain

Only two cities are showing a trend towards higher average rainfall, with Darwin's rate of increase relatively steep compared to that of Cairns. Darwin's average annual rainfall in 1952 was 1,582 mm, whereas in 2011 it had risen to 1,941 mm, an increase of 359 mm or 23 per cent. On the other hand, there has been little change to three cities over the past 60 years. Sunshine Coast's average maximum temperature has changed by less than 0.1°C and similarly, its average minimum has increased by only 0.4°C. Its average rainfall has declined by approximately 7 per cent. Townsville has experienced the lowest rate of decrease in rainfall, from an annual average of 1,142 mm to 1,111 mm. Townsville's average maximum and minimum temperatures have increased by about 1°C each. Cairns has experienced a trend increase in average temperatures of less than 1°C and an increase in average rainfall of 115 mm or 6 per cent. Liverpool in Sydney's west also has experienced a small decrease in average rainfall (60 mm) while temperature has increased approximately 1°C since 1963 (Bureau of Meteorology). Like Liverpool, Sydney City's annual average minimum and maximum temperatures have increased by about 1°C. However, Sydney's Observatory Hill has recorded a drop in rainfall of 149 mm, or two and a half times that of Liverpool over the same time.

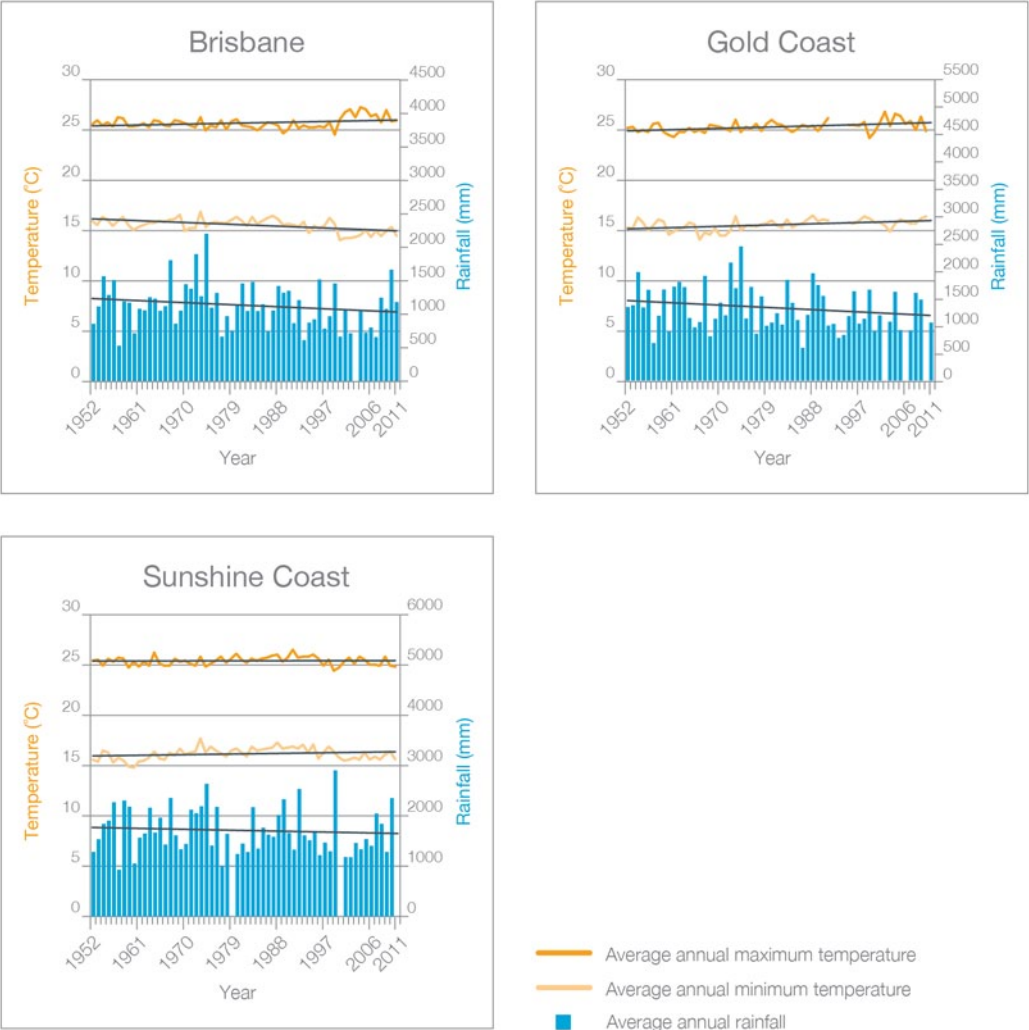


— Average annual maximum temperature  
— Average annual minimum temperature  
■ Average annual rainfall

Note: Variation in Albury-Wodonga's minimum temperatures could be influenced by different stations being used over the time period.

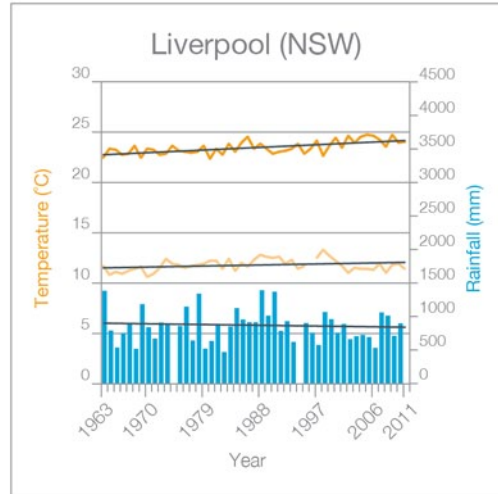
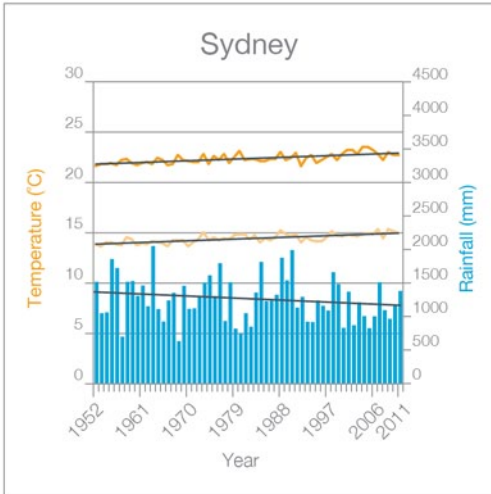
Source: Data from Bureau of Meteorology

Since 1952, trends in average temperatures for Queensland's southern coastal cities have shown less change than other major cities apart from those in the tropics. Brisbane's apparent trend of decreasing minimal temperatures is possibly in part due to another weather station being used from 2000.

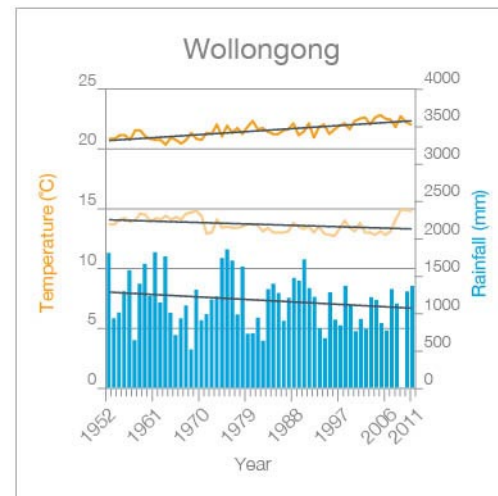
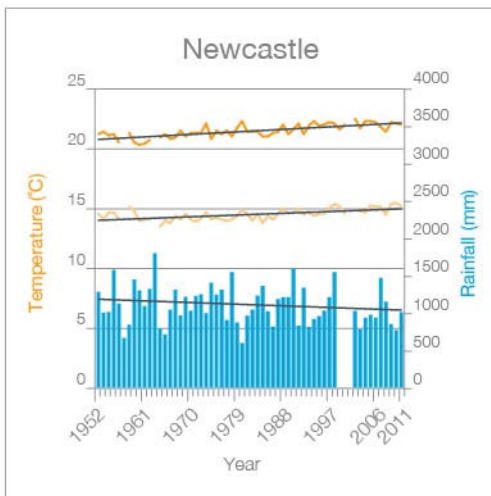


Source: Data from Bureau of Meteorology

With the exception of Wollongong's minimum temperature, which shows a decrease, Sydney, Newcastle, Wollongong and Liverpool all have similar patterns of long-term average temperature increases and rainfall decreases.



Note: Liverpool is included as an inland comparison with Sydney City (data available from 1963).



— Average annual maximum temperature    — Average annual minimum temperature    ■ Average annual rainfall

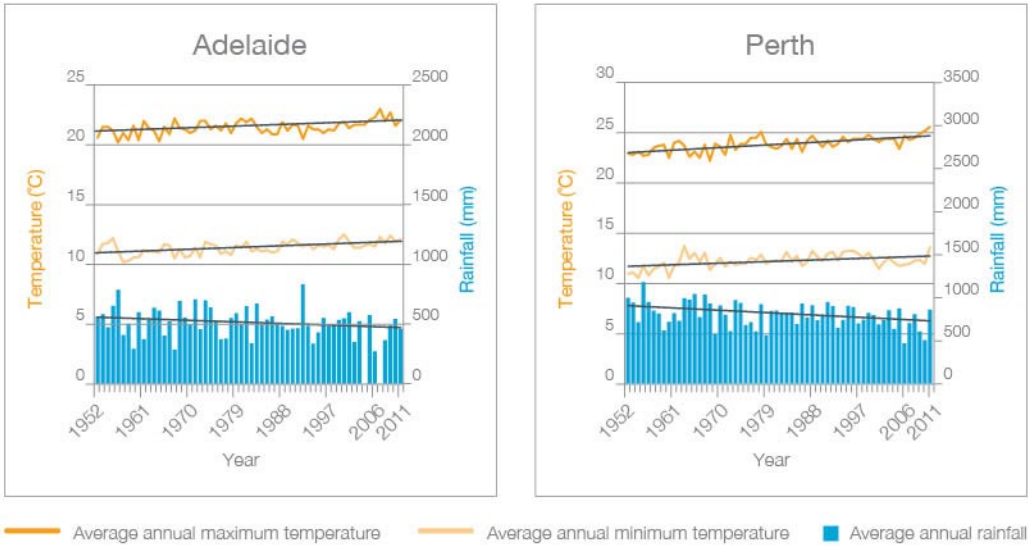
Note: Variation in Wollongong's minimum temperatures could be influenced by observations of minimum temperature being obtained from different weather stations over the time period.

Source: Data from Bureau of Meteorology



Drying cities

Australia’s two driest capital cities, Adelaide and Perth, display similar overall rates of increase in temperature and rainfall decline, although Perth has experienced a greater drop in average rainfall. South-west Western Australia has seen a significant reduction in rainfall and a rise in average temperatures since the mid-1970s. The reasons for this change in Perth’s climate are complex. One study concludes the likely cause to be a large-scale reorganisation of atmospheric circulation which sees a reduction in the intensity of low pressure cells’ development and some storms being deflected southwards (Frederiksen et al. 2007). Another hypothesis is that it is due to large-scale land clearing (Pitman et al. 2004). This may have implications for urban greenfield development in Perth and other major cities as they expand.

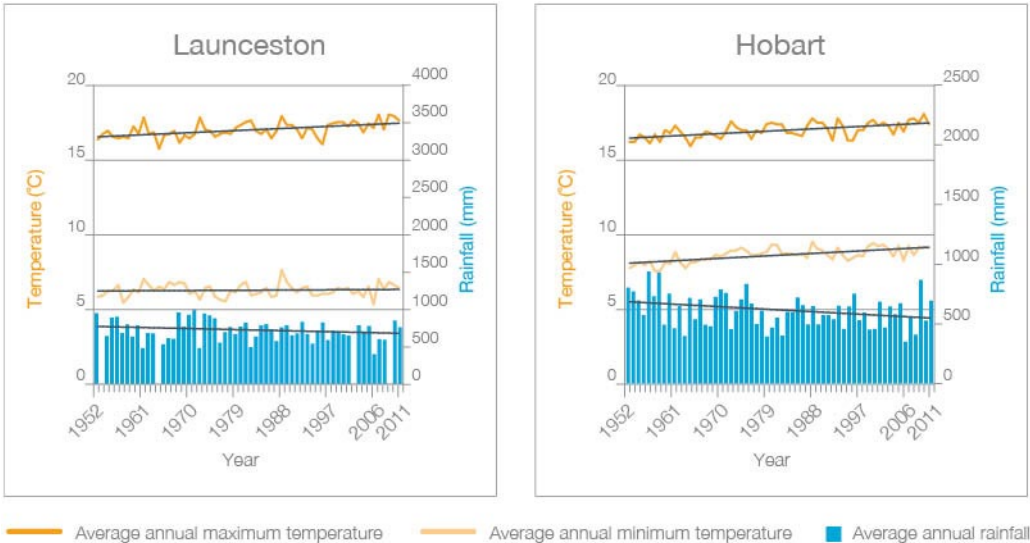


Source: Data from Bureau of Meteorology



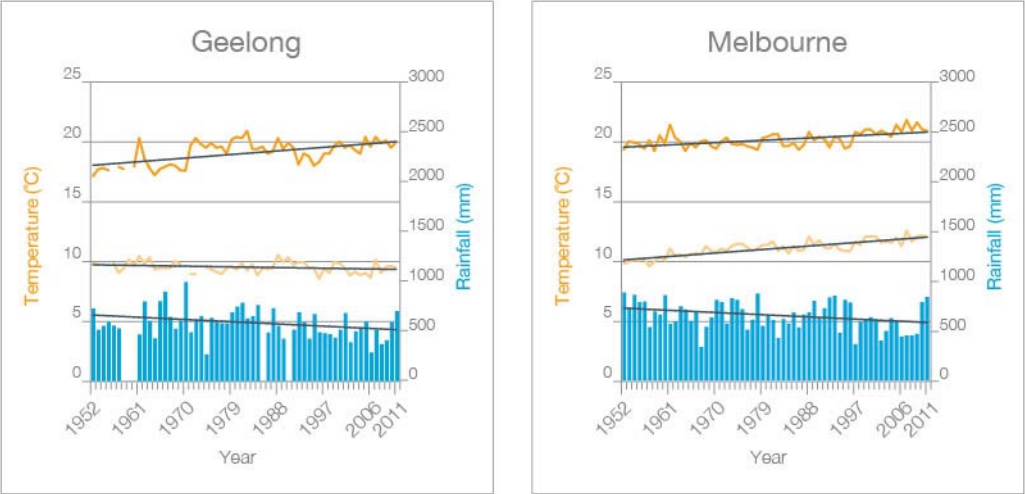
### Southern cities

The two most southern major cities of Launceston and Hobart clearly show changes in average temperature and rainfall. Hobart shows a steeper decline in average rainfall from 676 mm to 538 mm and also a greater increase in minimum temperature compared to Launceston, which has experienced virtually no rise in average annual minimum temperatures since 1952.

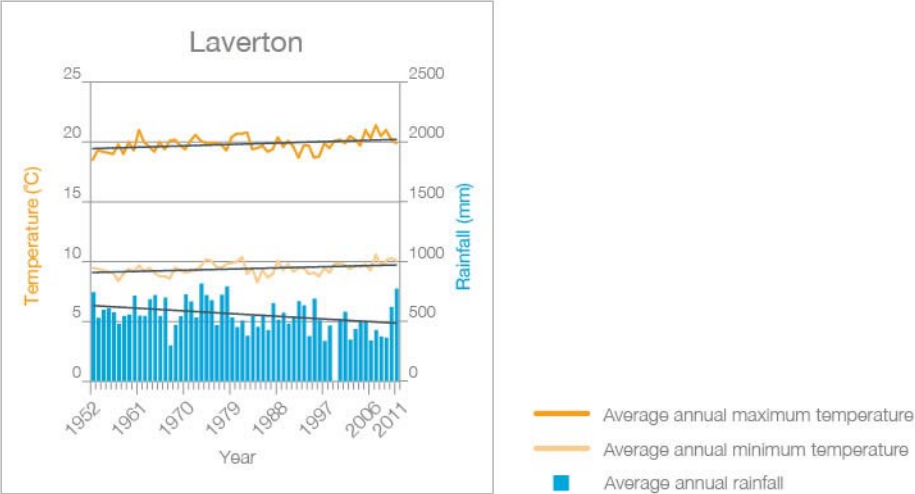


Source: Data from Bureau of Meteorology

Melbourne has experienced a consistent long-term rise in minimum temperatures since 1952, from an annual average of 10°C to 12°C. Records for Laverton RAAF Base to Melbourne's west show a very slight increase in average maximum and minimum temperatures. Geelong has had a similar rate of increase in maximum temperatures to Melbourne. However, its average minimum temperature shows a declining trend, perhaps reflecting different weather stations used over the sample time period. All three centres have experienced approximately the same rate of decline in average rainfall over the last 60 years.



Note: Variation in Geelong's minimum temperatures could be influenced by observations being taken from different stations being used over the time period.

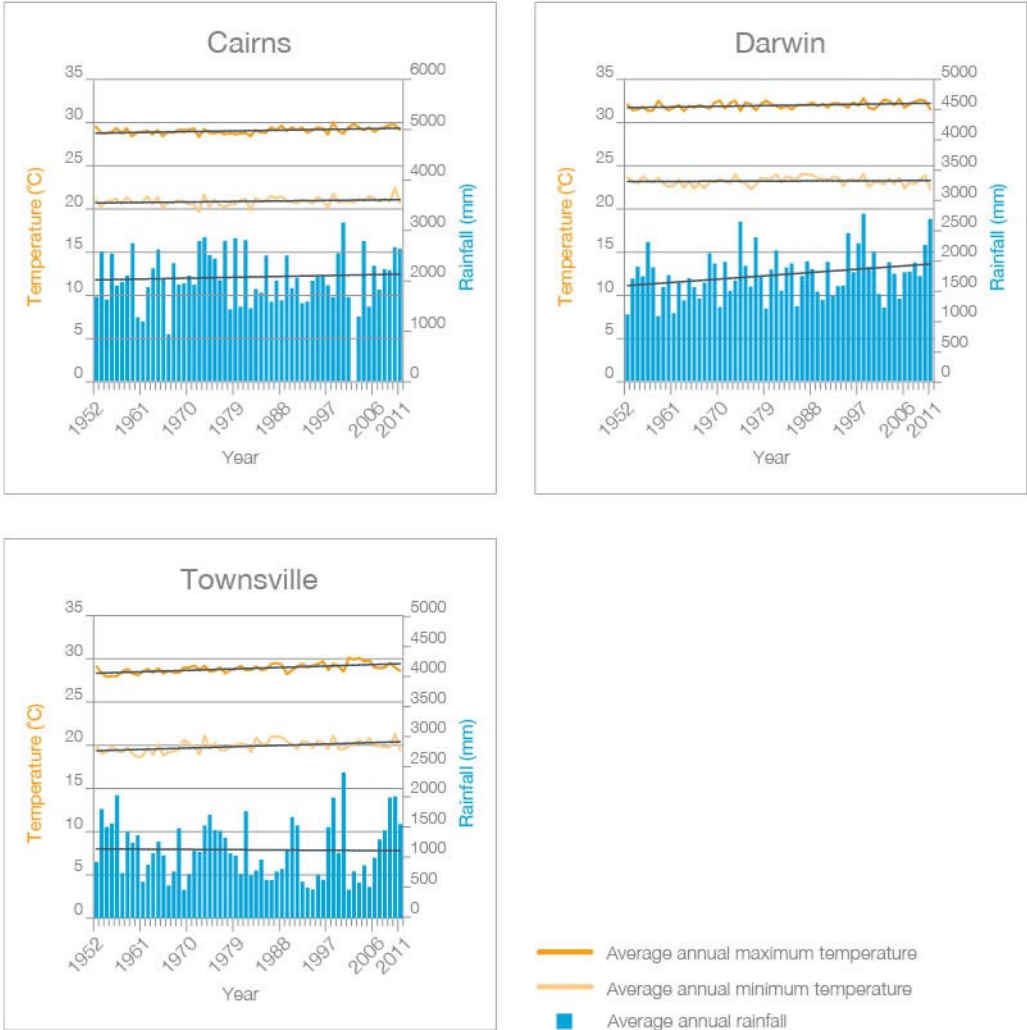


Note: Laverton included as an inland comparison with Melbourne.

Source: Data from Bureau of Meteorology

Northern cities

For the three tropical cities of Cairns, Darwin and Townsville, only Townsville has experienced any noticeable increase in temperatures of approximately 1°C and Darwin has had the only significant increase in average rainfall trend.



Source: Data from Bureau of Meteorology

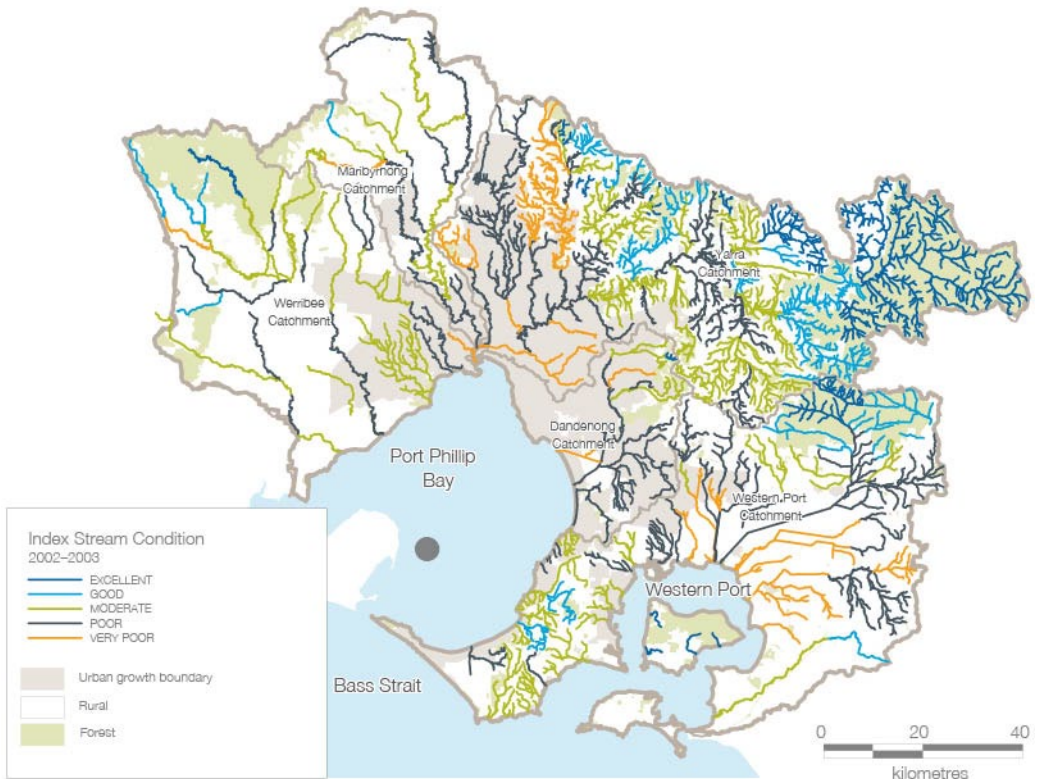
## Urban surface water quality

While Australia's coasts and surrounding oceans are in relatively good condition, inshore waters vary considerably, particularly in areas near human settlement. The ecosystems in coastal estuaries, bays and freshwater systems face direct pressure from urban runoff as well as significant long-term disturbance from sea level rise. Nutrient build-up is one of the most threatening elements in these coastal systems. The health of our urban waterways is a significant indicator of the sustainability in the design and management of our urban green infrastructure (Natural Resource Management Ministerial Council 2006). In the context of this report 'green infrastructure' refers to the network of natural and man made landscape assets that include waterway, parklands and reserves.

Figure 4-5 shows the river health condition of the urban and greater metropolitan catchment for Melbourne. Melbourne has some environmentally sensitive estuarine areas such as Western Port, which contains sites of international significance.

While urban areas are less than 20 per cent of the Port Phillip catchment by area, they contribute over 50 per cent of diffuse nitrogen loads and 60 per cent of diffuse phosphorus loads, which are precursors for blue-green algal blooms. Urban areas make up around two per cent of the Western Port catchment and yet contribute 14 per cent of diffuse nitrogen loads and 15 per cent of diffuse phosphorus loads (Melbourne Water 2012).

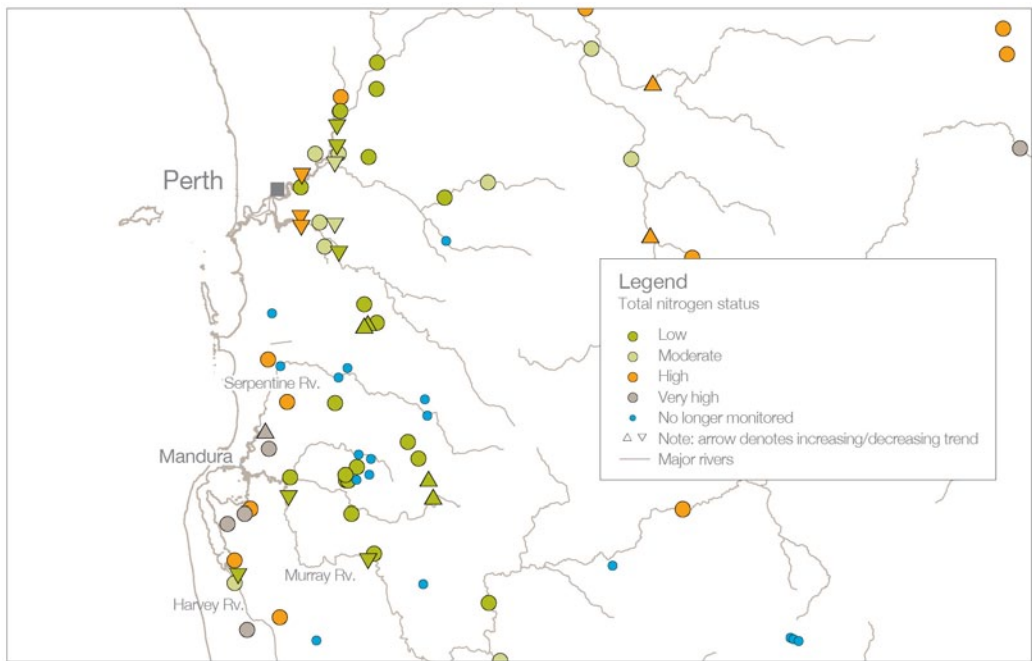
Figure 4-5 Greater Melbourne waterway condition 2002–03



Source: Melbourne Water 2012

In Perth a similar situation prevails in the Peel-Harvey Estuary near Mandurah. This area was well known for almost annual blue-green algal blooms from 1978 to 1994. Construction of the Dawesville Channel in 1994 increased ocean flushing and there have been no more blue-green algal blooms in the estuary. Unfortunately, blooms still frequently occur in the Serpentine and Harvey rivers near Mandurah's urban areas. Catchment modelling indicates that agricultural activities contribute most nutrients to the rivers and estuary (about 70 per cent). Developed urban areas represent six per cent of catchment area but contribute about 30 per cent of nutrient input (Environmental Protection Authority 2007, p.111).

Figure 4-6      Total nitrogen status at water quality monitoring sites – South-west WA

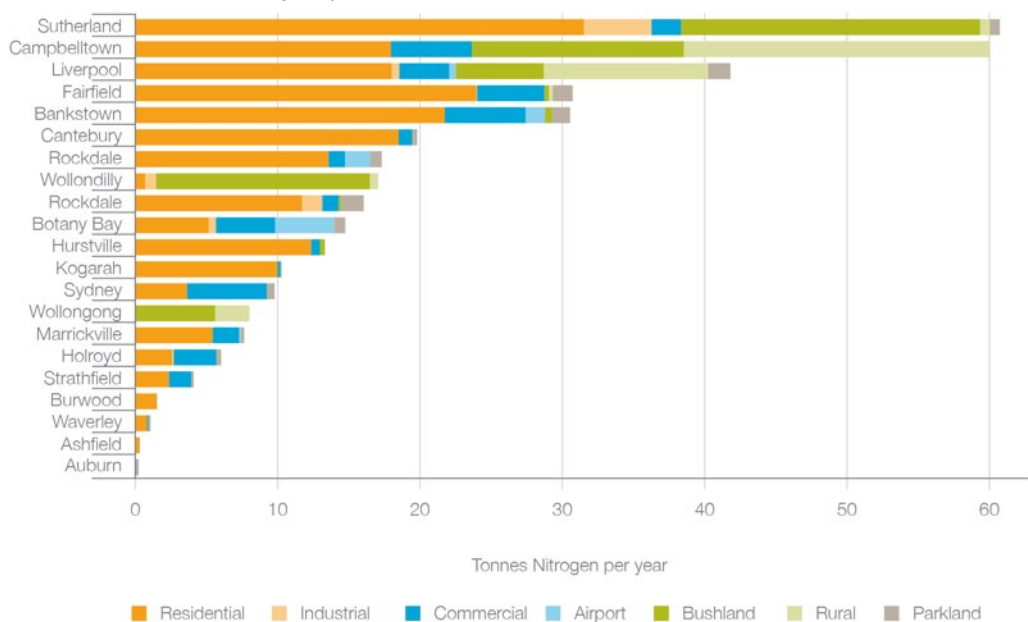


Source: Environmental Protection Authority 2007

The contribution of urban sourced pollutants to waterways can be further illustrated in Sydney's Botany Bay catchment. The Bay is also a national priority hotspot for water quality improvement and contains up to 36 threatened species, several of which are considered rare and endangered.

Figure 4-7 shows the levels of key pollutants by land source within the Botany Bay catchment. Modelling of future development impacts shows that if best practice water-sensitive design and waterway management systems are employed, a further 25,000 people could be accommodated in the catchment area and still see a reduction in the pollutant levels evident today (Sydney Metropolitan Catchment Management Authority 2008).

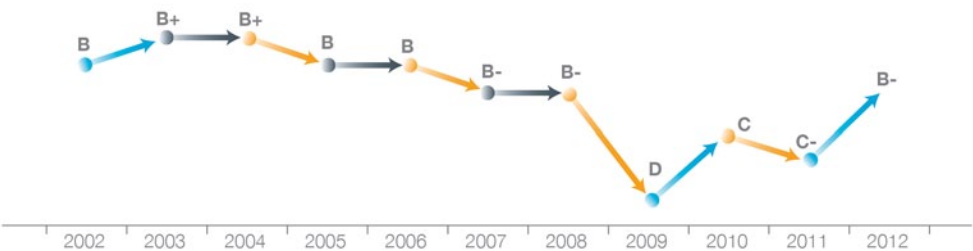
Figure 4-7 Mean annual pollutant loads per council area (total nitrogen tonnes/year)



Source: Sydney Metropolitan Catchment Management Authority 2008

Brisbane’s Moreton Bay has faced a decline in water quality standards since 2004, demonstrating the need to better manage their urban drainage and surface waters in an integrated and sensitive manner (Healthy Waterways 2011). The bay’s pollution levels are monitored against an integrated catchment management rating scale where A, B, C, D, and F respectively represent excellent, good, fair, poor and failed achievement of marine conditions.

Figure 4-8 Moreton Bay health index report



Source: Queensland Government Healthy Waterways 2011

The development of integrated management and design systems for our cities is now the subject of an Australian Government funded Cooperative Research Centre (CRC) for Water Sensitive Cities



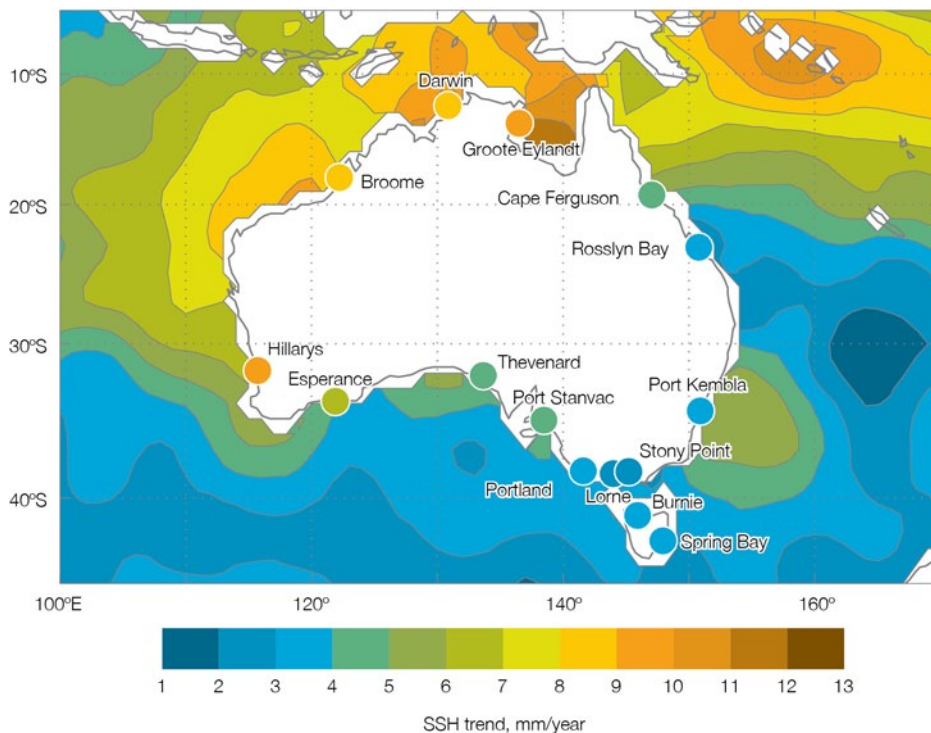
## Cooperative Research Centre for Water Sensitive Cities

Established on 1 July 2012 as a 'public good', the Cooperative Research Centre for Water Sensitive Cities has funding for nine years until 30 June 2021. The Centre brings together the inter-disciplinary research expertise and thought-leadership to undertake research that will revolutionise water management in Australia and overseas. In collaboration with over 70 research, industry and government partners, it is set to deliver the socio-technical urban water management solutions, education and training programs, and industry engagement required to make towns and cities water sensitive. With a research budget in excess of \$100 million, the work of the CRC will help guide capital investments of more than \$100 billion by the Australian water sector and more than \$550 billion of private sector investment in urban development over the next 15 years. The goal is for Australian cities to become more liveable, resilient, sustainable and productive. The research teams will be located in Brisbane, Melbourne, Perth and Singapore.

## Sea level rise

A key issue for Australia with our predominance of coastal cities is sea level rise and associated coastal hazards including coastal erosion and estuarine flooding. Sea level rise around Australia since 1993 has been greater than or equal to the global average (Bureau of Meteorology 2012).

Figure 4-9 Rates of sea level rise around Australia from January 1993 to September 2011



Note: As measured by coastal tide gauges (circles) and satellite observations (contours).

Source: CSIRO 2012

Sea level rise is not uniform around Australia and the variations will have added consequences for increased coastal erosion and storm surges for any given state or territory. Figure 4-9 and Table 4-1 show tidal gauge data for coastal sites and satellite data derived contours for open-sea observed changes around Australia from 1993 to 2011. According to the tidal gauge indications shown, Perth (Hillarys) and Darwin are the cities experiencing the highest rates of sea level rise, between eight and 10 millimetre per year. Townsville (Cape Ferguson) and Adelaide (Port Stanvac) have experienced sea level rises in the order of four to five millimetre per year whereas Melbourne (Stony Point), Hobart (Spring Bay – 70 kilometres north of Hobart) and Wollongong (Port Kembla) have recorded lower annual rises. Tools such as the Oz Coasts website show examples of the projected sea-level rise on maps of some of our major cities. This helps decision makers understand not only the current rate of sea level rise, but also the projected geographic changes that may result from it.

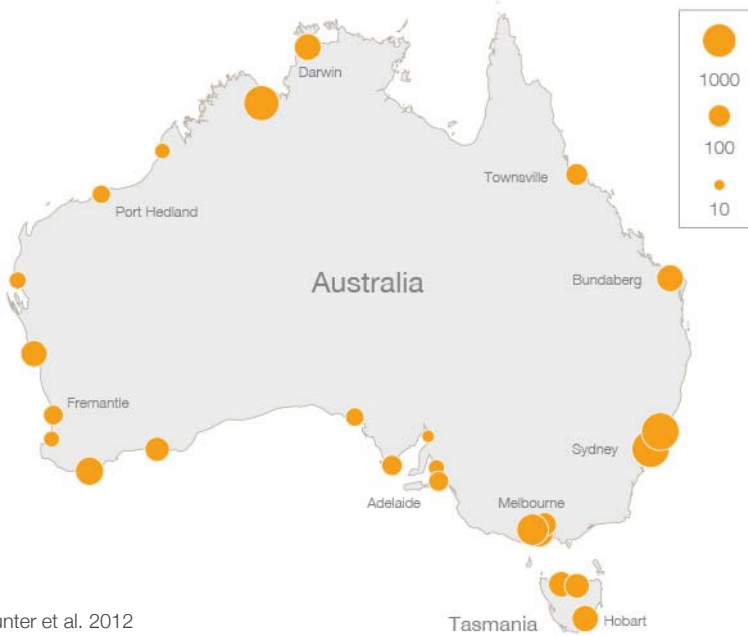
**Table 4-1** Tidal gauge measures of annual sea level rise 1993–2011 for selected coastal major cities

City	Sea level rise (mm)	Total average change (mm)
Perth	9–10	162–180
Darwin	8–9	144–162
Adelaide, Townsville	4–5	72–90
Hobart, Wollongong	3–4	54–72
Melbourne	1–2	18–36

Source: CSIRO 2012



Figure 4-10 Sea level rise multiplying effects



Source: Hunter et al. 2012

*State of Australian Cities 2011* discussed the multiplying effect of sea level rise on events such as storm surges, both in their intensity and the frequency. Figure 4-10 shows an estimate of increased prevalence of flooding events of a given height that might be expected to occur from a sea-level rise of 0.5 metres. For example, the middle-sized circles show that one in 100 year events will happen 100 times more frequently, and could be expected to happen on average once each year. This assumes that a place gets the same number of storm surges, but that they will each be slightly higher – and this ‘slightly higher’ causes a large increase in flooding events for a given height. In other words, if the sea comes over a sea wall once a year at present, it can be expected to break over it every day after the 0.5 metres of sea level rise is reached.

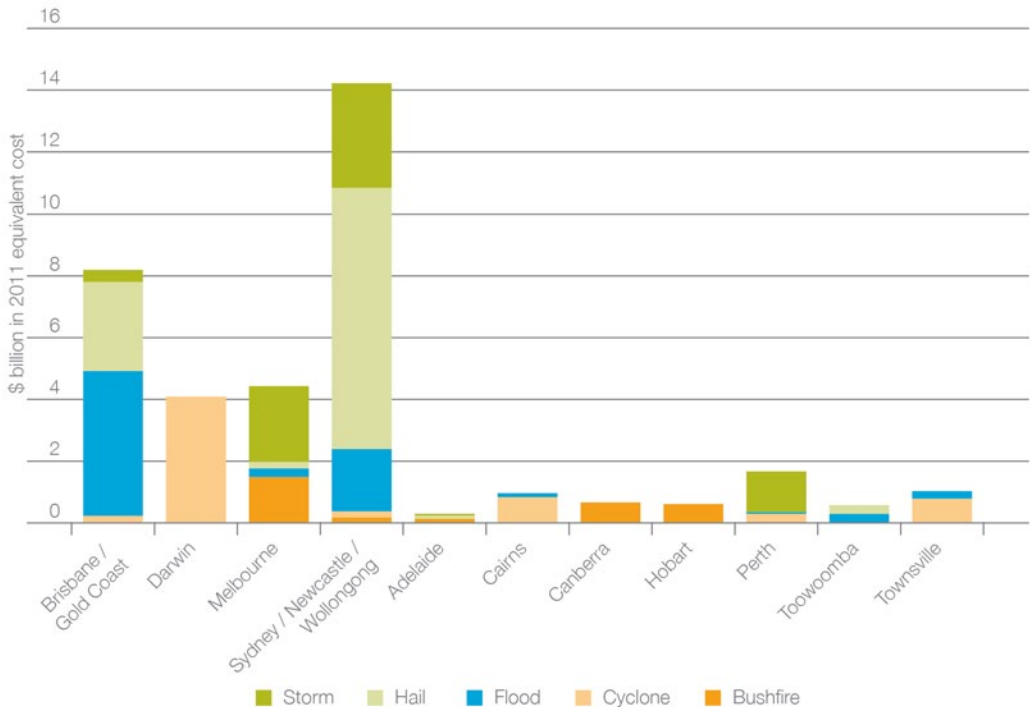
*State of Australian Cities 2011* illustrated a range of globally averaged projected sea level rises of between approximately 0.2 metres and 0.8 metres by 2100, based on the 2007 International Panel on Climate Change’s (IPCC) 4AR report on high and low ranges. Authoritative studies published since 2007 reveal the likelihood of much wider ranges of possible sea level rise by 2100: three studies estimate maximum sea level rise of more than 1.5 metres above present levels (Department of Sustainability and Environment, Victorian Government 2012).

The National Sea Change Taskforce has commissioned further work on the preparedness of coastal Australia for climate change adaptation (Gurran et al. 2011) to follow-up on the findings of its 2008 study. The report found different levels of adaptation awareness and planning among the private and public sectors across Australia. While most local government climate adaptation action is in early stages, many coastal councils have developed formal climate adaptation initiatives, ranging from studies of vulnerability to amending local Planning regulations, with some developing community engagement mechanisms. Cities with local climate change adaptation initiatives include Cairns, Geelong, Newcastle and the Sunshine Coast (Gurran et al. 2011). Several coastal major city councils were funded under the Australian Government’s Local Adaptation Pathways Program (2008–10) including Wollongong, Cairns, the Gold Coast, the Sunshine Coast, Perth and Launceston.

## Climate-related urban perils

Climate change will lead to more frequent severe weather events including severe fire danger days, floods and storms, as noted in *State of Australian Cities 2011*. Severe weather events affecting Australia's cities cost our communities dearly, as shown by Figure 4-11. Some cities are dominated by one particular climate-related peril – for example, Darwin, Cairns and Townsville by cyclones, Perth by storms and Sydney by hailstorms. Despite its overall mild climate, Sydney has historically incurred costs from most types of damaging weather events, with hailstorms being predominant. This may reflect not just Sydney's geographical position in relation to climate patterns but also its physical extent; its sheer spread means it is more exposed. Australia comprises about two per cent of the global insurance market, yet in the last half decade it has incurred six per cent of losses (Climate Institute 2012 p. 9).

**Figure 4-11** Insured costs (payments) of severe weather events in selected major cities 1967–2011



Note 1: This figure is an indication only of the relativities of different weather disasters in cities from data based on insurance payments for residential and commercial properties. It does not represent the actual total cost of each event.

Note 2: Some flood events are the result of cyclones – for example, Cyclone Wanda-related flooding of Brisbane in 1974.

Source: Insurance Council of Australia 2012

## Queensland floods 2009–12

Further to the *State of Australian Cities 2011* article on the 2010–11 Queensland floods, the Queensland Reconstruction Authority <http://www.qldreconstruction.org.au/> has since added the 2009–10 and 2012 weather disasters to its remit. Together these disasters have affected each of the six major cities in Queensland, some of them more than once. The Authority estimates that a total of \$12.2 billion worth of infrastructure repair work was needed, much of it for roads. Of this, the government-funded repair bill for the 2009–10 events is estimated to be \$3.2 billion, for 2010–11 events \$7.5 billion and for 2012 an estimated \$1.5 billion (Queensland Reconstruction Authority 2012). In addition to major infrastructure damage, the Queensland Floods Commission of Inquiry (2012) found that approximately 29,000 homes and businesses suffered some form of inundation. Over 58,000 residential and commercial insurance claims were made as a result of the 2010–11 floods. Just under half were residential claims (excluding contents). Brisbane City Council (2012) reports that the city's estimated cost of flood recovery work is now in excess of \$400 million (in addition to the value of the clean-up work done by thousands of volunteers in the immediate aftermath of the January 2011 flood), including:

- \$122 million for roads and related infrastructure
- \$41 million for disaster operations and clean-up
- \$23 million for parks
- \$19 million for the drain network
- \$12 million for creek remediation
- \$4.5 million for pools and libraries
- \$3 million for wharves, jetties and pontoons.

A state-of-the-art Damage Assessment and Reconstruction Monitoring system (DARMSys™) is now being used to monitor Queensland's rebuilding progress. Real time data is collected by assessors using a hand held monitoring device and sent via Wi-Fi to provide map-based damage data. Introduced as a pilot program in April 2011, the Queensland Reconstruction Authority is using the system to travel street-by-street and house-by-house through flood- and cyclone-affected communities to identify where the greatest needs exist. The Authority has also established interactive maps (Flood Check maps) which show 2010–11 Queensland natural disasters – flood lines and disaster imagery as well as floodplain mapping and reconstruction projects. The Australian Government has, through Geoscience Australia, launched the National Flood Risk Portal to give easy access to communities and planners to better prepare for flood disasters see <http://www.ga.gov.au/flood-study-search/> for more information.

## Bushfires

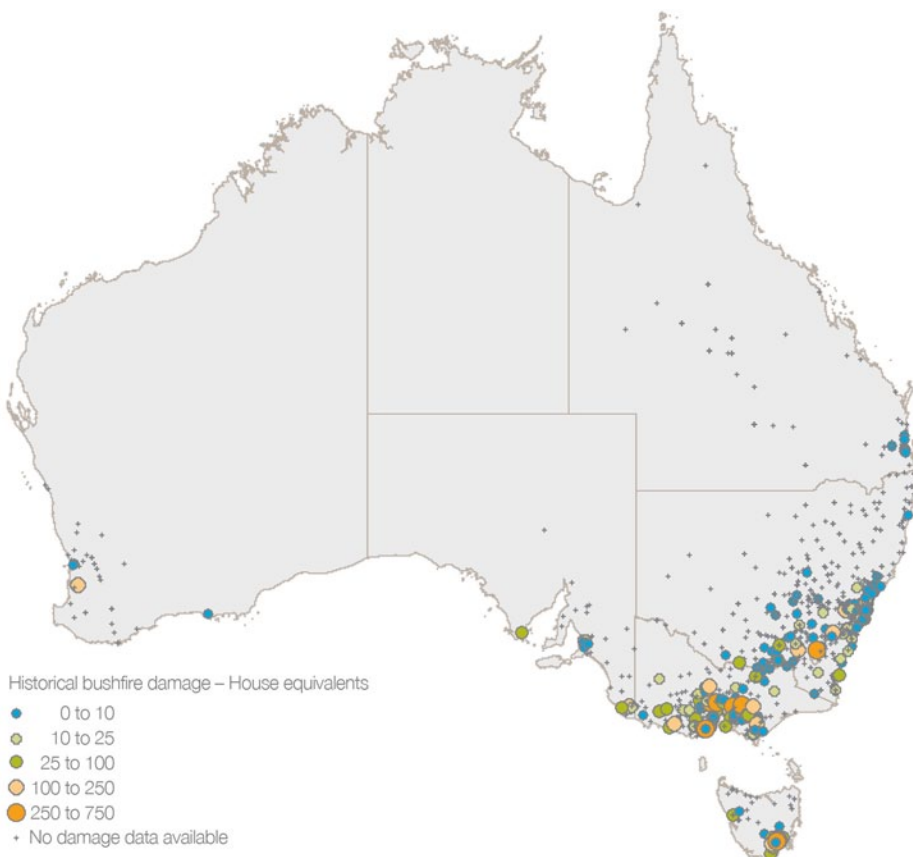
*State of Australian Cities 2011* discussed heatwaves as Australia's deadliest natural disaster; however, bushfires have also resulted in significant loss of life and injury and capture more media attention. The Climate Institute estimates that the number of very high and extreme fire weather days will increase by between 15 and 60 per cent by 2020 and double to quadruple by 2050 (Climate Institute 2007). During the past 100 years, over 600 people have died and over 4,000 have been injured due to bushfires (Australian Emergency Management Institute 2012).

According to the *State of the Environment 2011* report (State of the Environment 2011), the pattern of vegetation fires across Australia consists of:

- frequent fires in the tropical savannahs
- regular fires in arid and semi-arid grasslands following years of above average rainfall
- major fires in the south-east and south-west of the continent and in Tasmania associated with major drought cycles.

While the greater land area affected by fires is in the north of Australia, the greatest loss of property and life from fire is in the south, where most people live (Figure 4-12). The report notes that severe bushfire weather conditions appear to be becoming more frequent, with an upward trend in the cumulative forest fire danger index (a measure of predicted fire severity) since the 1980s (State of the Environment 2011). The Climate Institute (2012) notes the non-linear increase in bushfire risk against temperature rise: with a 1.5°C temperature increase, bushfire risk increases by up to five per cent.

**Figure 4-12** Annual number of buildings (in House Equivalents) lost in bushfires in Australia 1900–2009



Note: House Equivalents are used to normalise losses of various types of destroyed structures – residential homes, commercial buildings, churches, etc. – onto a common footing of equivalent residential houses using relative building costs and average floor areas.

Source: PerilAUS in Chen and McAneney 2010, reproduced with kind permission of the authors

The Forest Fire Danger Index (FFDI) for Victoria’s Black Saturday fires in February 2009 rose to unprecedented levels, ranging between 120 and 200 (noting that a FFDI over 50 represents extreme fire danger) (Fisher 2012). Many severe fires penetrate a long way into major population centres. On Black Saturday, one of the major fires burned to within two kilometres of the central business district of Bendigo, a city of almost 100,000 people (Fisher 2012). Bushfires around major cities not only just threaten properties and lives by fire, they can also contaminate water storage as was the case in Canberra when heavy rain following the 2003 fires washed ash and mud into dams. Serious contamination of Melbourne’s already depleted supply would have occurred in 2009 had rain followed the fires, as fire entered its water catchments on 10 February (Fisher 2012).

Table 4-2 summarises building loss and fatalities in four major bushfires since 1967, showing that the largest proportion of losses occurred in a limited number of extreme bushfires (Chen and McAneney 2010).

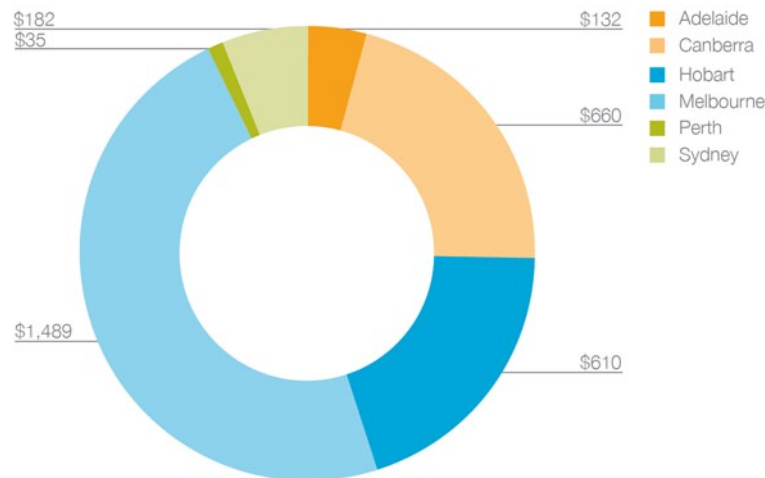
Table 4-2 Houses destroyed and lives lost in major bushfires involving urban areas between 1960 and 2009

Year	Location	Houses destroyed	Lives lost
1967	Tasmania (Hobart)	1,557	62
1983	Victoria and South Australia (Melbourne, Adelaide)	2,253	75
2003	ACT (Canberra)	530	4
2009	Victoria (Melbourne)	2,029	173

Source: Chen and McAneney 2010 and Australian Emergency Management Institute 2012

Figure 4-13 shows that, between 1967 and 2011, Melbourne suffered the majority of bushfire-related costs of almost 50 per cent of the total \$3.1 billion, followed by Canberra and Hobart with about 20 per cent of total costs each.

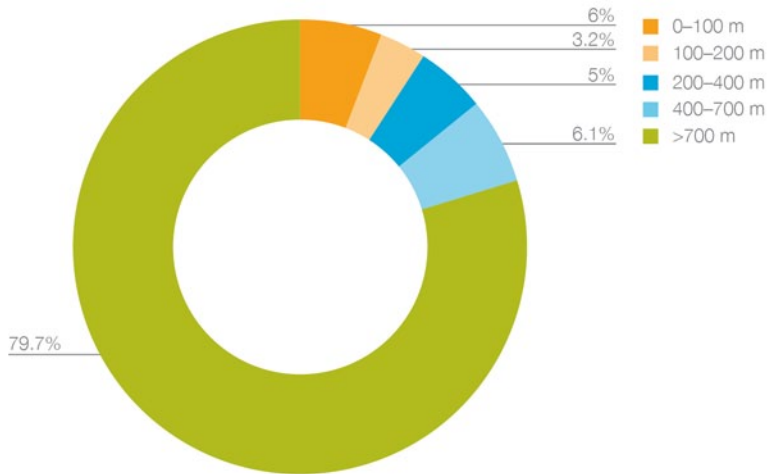
Figure 4-13 Proportion of major bushfire-related building costs in selected major cities 1967–2011



Note: Figure in 2011 cost equivalents (millions).  
Source: Insurance Council of Australia 2012

The increased frequency of extreme fire danger days due to climate change and population growth are increasing the risk to lives and property from bushfires, as evidenced by recent major fires in California and Russia, as well as Victoria's Black Saturday fires, which cost 173 lives and 2,133 houses (Gibbons 2012).

**Figure 4-14** Proportion of Australian addresses by distance from large areas of bushland



Source: Chen and McAneney 2010

### Distance from significant bushland

Figure 4-14 shows the percentages of Australian addresses by distance category from large areas of bushland. Chen and McAneney (2010) estimate that about 490,000, or six per cent, of addresses in capital cities are within 100 metres of substantial bushland, and over 750,000 within 200 metres. The encroachment of peri-urban greenfield development into bushland and the attractiveness of living close to Australia's eucalypt bushland mean that increasing numbers of buildings in Australia's cities will be exposed to risk from bushfires. In particular, communities around urban parklands are largely unaware of the bushfire risk they face, and current communication campaigns about such risks in our cities may be ineffective (Everett et al. 2012). Distance between buildings and bushland is not the only bushfire vulnerability variable, but it has been shown to be the most important.

Studying landscape management in the context of bushfires can yield some important lessons for urban decision makers. One such study analysed the effectiveness of fuel reduction in providing greater protection to fire-prone peri-urban areas. The study examined 499 houses destroyed in the 2009 Black Saturday bushfires in Victoria (Gibbons 2012) and found that six variables have the potential to reduce the chances of dwellings being destroyed by bushfire. These are, in order of importance:

- tree and shrub cover within 40 metres of houses
- the type of such cover (remnant or planted)
- upwind distance from houses to groups of woody vegetation
- upwind distance from houses to public forest
- the upwind distance to prescribed burning (within five years)
- the number of buildings/structures within 40 metres of houses.

The study concluded that clearing vegetation within 40 metres of houses was twice as effective at protecting houses than prescribed burning (over a large area as well as close to houses) (Gibbons 2012). This is not to say that prescribed burning should not be a part of land management practices in bushfire-prone peri-urban areas: Gibbons notes that ‘15 per cent fewer houses were destroyed if prescribed burning occurred at the observed minimum distance from houses (0.5km)’ (Gibbons 2012 p. 8).

Other studies have shown that roughly half of destroyed dwellings in the Como-Jannali fires (Sydney, 1994), the Otway Ranges (Victoria’s 1983 Ash Wednesday fires) and Hobart (1967) occurred at a distance less than 50 metres from bushland and (excluding the Canberra fires), 80–90 per cent of all destroyed buildings were within 100 metres of bushland (Chen and McAneney 2010).

Figure 4-15 shows the cumulative distribution of buildings destroyed in selected major bushfires in relation to distance from bushland.

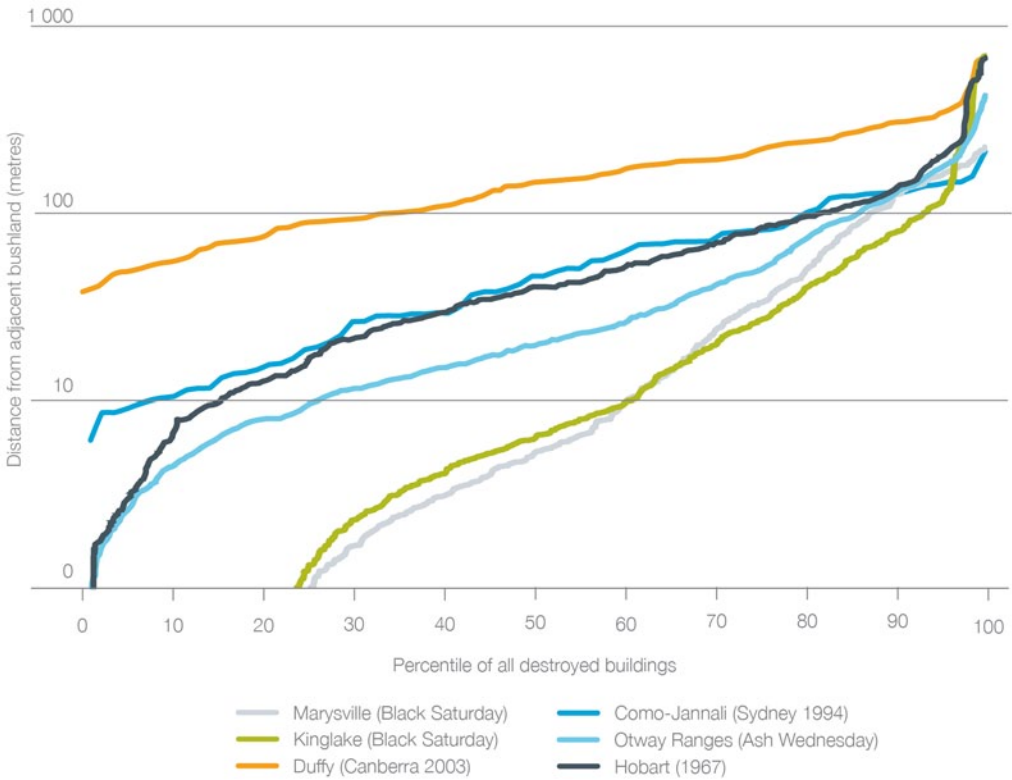
*CSIRO Pyrotron Bushfire Research Facility, Canberra.*

Image courtesy of CSIRO





Figure 4-15 Percentiles of destroyed buildings in selected major bushfires by distance from bushland



Note 1: The trend for Duffy is different owing to forced evacuations during the Canberra bushfires and thus buildings were subject to more unprotected sustained ember attack.

Note 2: Percentile is the range of a frequency distribution divided into 100 parts by percentiles: for example, 15 per cent of the data lies below the 15th percentile, 40 per cent below the 40th, etc.

Source: PerilAUS in Chen and McAneney 2010, reproduced with kind permission of the authors

Table 4-3 Distances at selected percentiles of destroyed buildings in selected major bushfires (metres)

Percentiles	50th	60th	70th	80th	85th	90th	95th
Marysville	5	10	23	48	83	126	159
Kinglake	6	10	20	40	56	79	114
Duffy	145	170	192	238	265	305	340
Como-Jannali	45	60	72	97	122	135	142
Otway Ranges	19	31	51	88	108	145	198
Hobart	39	49	66	92	104	127	191

Source: Chladil in Chen and McAneney 2010

Table 4-3 shows approximate distances in metres at various percentiles of destroyed buildings: the column labelled 50th percentile shows the distance from bushland within which 50 per cent of buildings were destroyed. In other words, buildings very close to bushland in



a bushfire are subjected to all fire perils: flames, radiant and convective heating and ember attack (Chen and McAneney 2010).

## Responses to bushfires in Australia's urban contexts

In this context, the vital issue of land use planning in relation to bushfire risk in peri-urban areas needs to be considered further. Positive steps are being taken, particularly since the release of the 2009 Victorian Bushfires Royal Commission's recommendations. Victoria, NSW and South Australia are improving their mapping of bushfire-prone areas and amending their planning provisions to restrict new developments and subdivisions in those areas of highest risk, such as the Adelaide Hills. The Royal Commission's recommendations include that Victoria's Country Fire Authority amend its guidelines for assessing permit applications for dwellings, non-dwellings and subdivisions in bushfire-prone areas to:

- 'clarify that the CFA will approve new developments and subdivisions only if the recommended bushfire protection measures – including the minimum defendable space – can be created and maintained on a continuing basis
- emphasise the need for enduring permit conditions – in particular, conditions for the creation and maintenance of minimum defendable space to be maintained for the life of the development'

(2009 Victorian Bushfires Royal Commission 2010, Recommendation 40).

In response to the 2009 Victorian Bushfires Royal Commission, defendable space requirements have been developed in conjunction with the CSIRO and promulgated by the Victorian Government (Department of Planning and Community Development 2012). The new rules allow trees to be cleared within 10 metres of buildings and 40 metres from fence-lines: if applied across an urban area, this could denude a suburb's landscape of trees (Fisher 2012).

The Dandenong Ranges on Melbourne's outskirts will feature in a pilot program designed to improve bushfire preparedness among local community, government and fire agencies. The Dandenong Ranges has a complex bushfire risk due to the intersection of public and private land. The Dandenong Ranges Bushfire Landscape Plan will address existing gaps in fire management plans, while identifying short- and long-term issues and priorities to improve bushfire safety. The Plan will review a range of issues, including public and private land management, demographics and population, community planning and preparation and understanding fire behaviour (Fire Services Commissioner Victoria 2012).

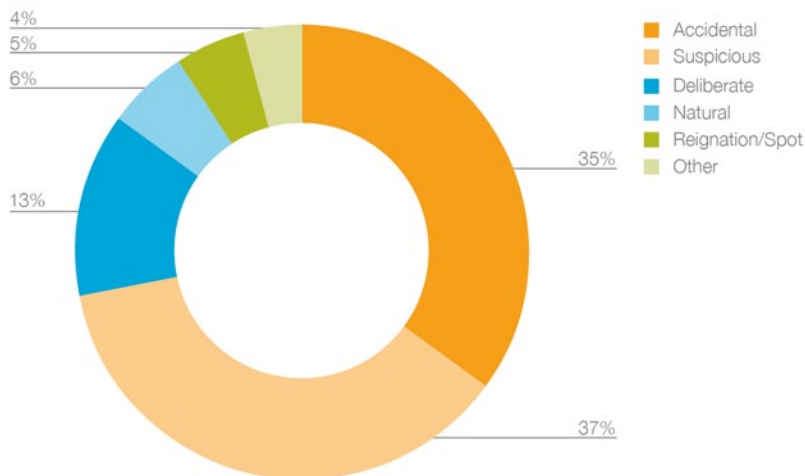
As Western Australia's leading hazard management agency, the Fire and Emergency Services Authority of Western Australia (FESA) performs a critical role coordinating emergency services for a range of natural disasters and emergency incidents threatening life and property. FESA was established to improve the co-ordination and planning of emergency services in Western Australia. FESA has adopted an 'all hazards' approach to emergency management, working in partnership with the community and other government agencies to prevent, prepare for, respond to and recover from natural disasters and emergencies. In response to inquiries into the Perth Hills fires of 2011 and 2012, Western Australia is developing an integrated bushfire risk management system for the state. Objectives include ensuring bushfire risk is identified, considered and reflected in planning processes and controls and development decisions, and to also progressively decrease the legacy bushfire risks in existing development areas.

In 2012, the Hobart City Council Strategic Risk Register identified 'Failure to appropriately adapt to and manage the impacts of climate change' as a significant risk requiring active management. Because changes in wildfire incidence and severity are likely effects of climate change, the Council is embarking on a full redevelopment of its fire management strategy. Tasmania is close to finalising a planning directive – Bushfire Prone Areas Code. Once finalised, the Code will be incorporated into all existing planning schemes, draft planning schemes and interim planning schemes. The Code is intended to ensure that bushfire issues are identified and fully considered at the planning application stage of the development process in a consistent manner across Tasmania. The Code will be applicable to all development within a defined bushfire-prone area and will require that developments be assessed by the Tasmanian Fire Service or an accredited person before they are approved.

### Arson

Each year the deliberate lighting of fires causes significant damage to people, property, flora and fauna in Australia. Bushfire arson is a major threat to the Australian community, with up to 50 per cent of bushfires in Australia being deliberately lit or started in suspicious circumstances, as shown in Figure 4-16 (Bryant, 2008). The edges of our major cities are particularly vulnerable to bushfire arson by virtue of their greater population and ready access to large tracts of bushland. However, the Fire and Emergency Services Authority in Western Australia (FESA) has been able to achieve significant reductions in the number of deliberately lit fires. From July 2010 to June 2011, 196 arson related charges were laid by Western Australian Police under the *Bush Fires Act* (1954) (WA) and s44 of the Criminal Code. On 16 December 2009 the *Bush Fires Act* (1954) (WA) and the Criminal Code were amended to increase penalties and clarify the definition of property regarding charges involving arson. 'Property' now means personal or real estate property including Crown land, bushland and fauna (FESA 2012).

Figure 4-16 Proportion of vegetation fires in Australia by cause



Note: Figures are from an Australian Institute of Criminology study of 280,000 fire records between 2002 and 2008.

Source: Bryant 2008

## National Work Plan to Reduce Deliberate Bushfires

The National Work Plan to *Reduce Deliberate Bushfires* is a nationally agreed policy framework to address bushfire arson in Australia. The plan was endorsed on 20 November 2009 by the Australian Government and state and territory police and emergency management ministers. It aims to reduce the incidence of bushfire arson through collaborative national approaches across all agencies and jurisdictions (Attorney-General's Department 2012).

The plan details 10 actions, which have already seen significant progress:

- Develop a national strategy to reduce bushfire arson and to provide direction to individual jurisdictions and agencies
- Use prevention and community education programs in high-risk fire and arson areas at the urban-rural interface
- Promote nationally consistent arson and bushfire offences
- Produce a best practice bushfire arson prevention handbook
- Develop programs aimed at known arsonists and recidivist arsonists
- Update nationally-accredited training programs for fire agency and police personnel, including strategies for preventing bushfire arson
- Raise community awareness of bushfire arson by incorporating arson prevention messages in existing community awareness programs
- Support a nationally consistent framework for collecting data on bushfire arson
- Research socioeconomic and demographic factors that suggest the potential for someone to commit bushfire arson
- Promote a two-way information flow on arson prevention between practitioners, researchers and policy makers.

## Responses to climate change

### Barriers to effective climate change adaptation

#### Productivity Commission Inquiry into barriers to effective climate change adaptation

In September 2011, the Assistant Treasurer commissioned the Productivity Commission to conduct an inquiry into barriers to effective climate change adaptation. The Productivity Commission released its draft report, *Barriers to Effective Climate Change Adaptation*, in April 2012. The draft report emphasised the importance of effectively managing the current climate. However, it also identified scope to build on managing the current climate in terms of adaptation to future climate trends.

The draft report included recommendations with significant implications for effective adaptation of Australia's cities. Notable city-relevant recommendations include the need for flexible land use planning and building regulation reform, new approaches to manage climate risks to existing settlements and general principles for infrastructure investment decisions.

#### Land use planning and building regulations

Land use planning regulation needs to be flexible to respond to climate change. In order to achieve the required flexibility land use planning systems should be revised to enable a risk management approach. In addition, state and territory governments should clarify the roles and responsibilities and legal liabilities of local governments for adaptation, particularly in the areas of land use planning and coastal management.

The National Construction Code and associated standards should be revised to take climate change impacts into account. The Australian Building Codes Board should develop a formal work program that outlines its approach to incorporating climate change in the National Construction Code.

#### Existing settlements

Cities need to start adapting and new approaches may be needed to manage climate change risks to existing settlements. This requires consideration of whether, how and when governments should 'protect' cities or towns, or relocate communities from high hazard risk areas. Currently, there is no well-established policy response to this issue. As a result, it may be necessary to develop national approaches to support strategic management of climate change risks for existing settlements.

#### Infrastructure investment decisions

There are several general principles that should be followed by government and the private sector when making adaptation decisions for infrastructure. The operator of infrastructure is likely to be best placed to consider adaptation investments. Adaptation investments should be subject to cost-benefit analysis and all investment options should be considered. The timeframes associated with adapting infrastructure should be taken into account.

## Planning for risk and adaptation

Decisions about where our cities grow and source their food, energy and water will need to take account of future climate risks, including floods, fires, coastal inundation and erosion. Commercial mechanisms for risk management, such as property investment, appear to be lagging in preparedness. A report by the Australian Institute of Superannuation Trustees and the Climate Institute (2011) found that 65 per cent of funds have not recognised the impacts that climate change will have on investment portfolios, and similarly 83 per cent of superfunds replied ‘no’ to the question ‘do you believe that systemic risks like climate change are currently being priced into asset valuations properly?’. These oversights are likely to have significant implications as climate change continues to unfold.

Examples of major city climate change adaptation plans that are flexible can be seen in Perth and South-east Queensland. In Perth the Water Corporation is implementing a three-part strategy to meet the city’s changing water requirements to 2060, including reducing water consumption by 25 per cent, increasing the proportion of recycled water to 60 per cent and developing more desalination plants (Stocker et al. 2012). Southeast Queensland has developed a staged ‘bottom-up’ approach to help coastal communities become more resilient to climate change, as illustrated by the SEQ Climate Proofing Demonstration Project (Laves and Waterman 2012).

In addition, tools such as the Antarctic Climate & Ecosystems Cooperative Research Centre’s sea level calculator (“Canute”) can help decision makers with information on height adjustments for certain infrastructure (via ‘Canute’ at [www.sealevelrise.info](http://www.sealevelrise.info)). Canute also contains a shoreline recession calculator.

The Victorian Solar Atlas maps solar energy resources across Victoria to help investors and developers make decisions about the best sites for solar projects: see <http://www.dpi.vic.gov.au/energy/sustainable-energy/solar-energy/what/victorias-solar-resource-details/solar-data/atlas>.

## CSIRO Climate Adaptation Flagship research

Research in the CSIRO Climate Adaptation Flagship is aimed at helping Australia adapt effectively to climate change and variability. CSIRO scientists work in partnership with governments, industries and communities to address this urgent national challenge.

The Flagship provides urban and coastal settlements with information and knowledge to support climate-adaptive built environments. A new approach called Climate Adaptation Engineering blends traditional engineering knowledge with adaptation thinking.

The research considers safety, serviceability, durability and sustainability at the individual scale and reliability, resilience and adaptability at the broader landscape scale. It also offers decision pathways for planning, design, construction, maintenance and renewal over the lifecycle of the built environment under different climate change scenarios.

Adaptations, such as changes made to design standards and retrofitting existing homes reduce the vulnerability of new and existing infrastructure to extreme events such as cyclones and inundation. However, cost effectiveness is crucial towards the successful implementation of adaptations.

CSIRO Flagship research is looking at Queensland to assess the vulnerability of buildings to extreme wind and inundation and the cost effectiveness of the required adaptations and its effectiveness. It is also considering the benefits of timely implementation of such measures and the risks, costs and benefits of deferring such measures. As an example, increasing the design wind classifications in the *Australian Standard Wind Loads for Houses AS4055-2006* for all new housing from 2011 shows promise as a cost-effective climate adaptation strategy. However, by deferring adaptation to 2030 in Brisbane, the benefit could be halved by 2100.

In the long term, construction of new housing with higher floor heights for adaptation to coastal inundation is also sensible. The longer the adaptation policy time horizon, the larger the extent of the adaptation required to attain the optimal benefit.

Recent CSIRO Flagship research, involving the Urban Development Institute of Australia and the Property Council of Australia (Queensland), surveyed the members of the urban development sector in three Australian states about climate change and adaptation. The research found that developers are acutely aware of the potential for regulatory costs and the community expectations of the need for climate adapted urban developments.

Further CSIRO Flagship research points to land devaluation due to sea levels rising, exposing new areas of residential land to the risk of inundation and worsening the situation for those areas that already experience inundation. It concludes that the resulting devaluation of residential land is likely to match the costs of building damage due to inundation. As a result, major community-scale adaptations will return more benefit in avoided damages than they cost to build.

## Urban impacts on natural resources in metropolitan fringe regions

Concern about development at the edge of Australian cities is becoming a regular fixture on the agenda of industry bodies and governments, not to mention community groups and the media (Note 1). This echoes an emerging international focus on peri-urban regions, as questions are asked about the footprint of urbanisation (Note 2). It is also the predictable consequence of steady population growth in Australia's most environmentally-favoured areas combined with an urban policy predicated on low-density development and car ownership.

Recent years have seen an emerging awareness of the significance of peri-urban regions to Australian agriculture and our food supply system. Nationally, these regions produce a disproportionately large share of total farm-gate value (Houston 2005) and are major sources of fresh produce (Donovan et al. 2011). Table 4-4 shows the amount of selected Australian cities' vegetables produced almost exclusively in their peri-urban regions.



*Main South Road, cutting through McLaren Vale South, Australia*  
Image courtesy of Peter Houston

Table 4-4 Major city peri-urban production for typical vegetables 2007–08 as a percentage of state production (weight)

Perishable Commodities	Sydney	Melbourne	Brisbane Fringe	Brisbane and Coast	Adelaide	Perth	Hobart, South and North SDs	Australia % of total	Total Values \$m
Asian Vegetables	94%	53%	98%	50%	22%	93%	100%	72%	23.2
Asparagus	0%	93%	100%	100%	0%	0%	0%	92%	9.8
Broccoli	11%	61%	100%	70%	4%	22%	21%	50%	46.1
Capsicums	79%	12%	36%	82%	97%	31%	100%	72%	56.6
Celery	73%	100%	100%	51%	100%	74%	0%	89%	55.6
Cucumbers	63%	80%	80%	73%	91%	71%	42%	76%	15.7
French and Runner Beans	37%	1%	42%	92%	22%	51%	0%	72%	16.4
Herbs – Parsley	96%	80%	87%	61%	100%	95%	88%	83%	2.9
Herbs – Basil, Coriander, etc.	89%	48%	56%	81%	98%	88%	100%	83%	4.4
Leeks	98%	92%	100%	2%	22%	100%	8%	78%	6.3
Lettuce Head	43%	74%	100%	60%	32%	45%	100%	58%	135.4
Mushrooms	79%	84%	91%	75%	100%	0%	0%	83%	42.3
Silverbeet and Spinach	97%	55%	100%	16%	100%	93%	14%	55%	10
Spring Onions and Shallots	83%	92%	100%	99%	76%	95%	100%	94%	7.8
Zucchini and Squash	59%	4%	65%	90%	27%	14%	14%	66%	20.3
<b>Total</b>	<b>67%</b>	<b>62%</b>	<b>84%</b>	<b>67%</b>	<b>59%</b>	<b>58%</b>	<b>46%</b>	<b>75%</b>	<b>453</b>

Source: Thompson (ed.) derived from ABS agricultural commodity data 2008



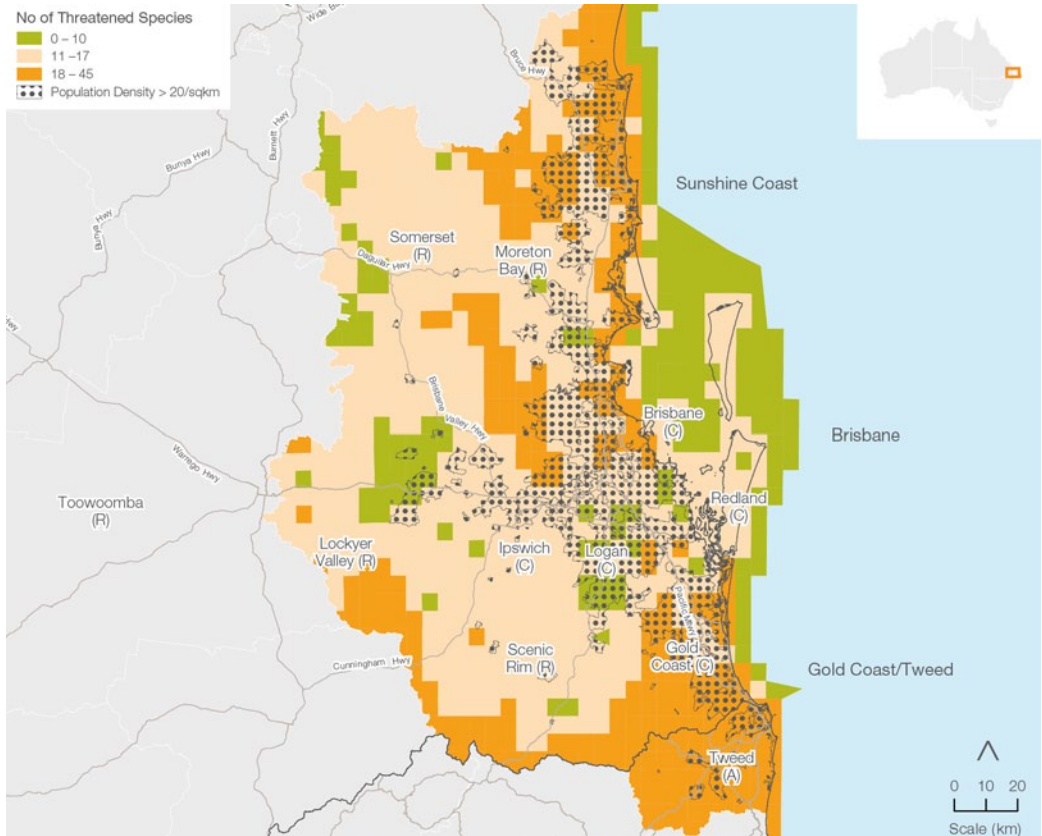
In 2010 the Australian Government's Issues Paper *A Sustainable Population Strategy for Australia* noted that:

*'The amount of land which is suitable for intensive agricultural, horticultural and viticultural production in Australia is strictly limited and a substantial part of it lies on the fringe of Australia's major cities as well as around the nation's major regional centres. The rate at which this land is being alienated for urban use is high and continuation of fringe development policies threatens the nation's agricultural production' (Commonwealth of Australia).*

A similar theme has begun appearing on the COAG agenda of primary industries ministers, albeit as part of a wider question about the availability of key agricultural lands in the face of changing demands on rural landscapes such as mining (DAFF pers. comm.).

Besides food and agriculture, peri-urban regions often contain areas of high ecological value. As illustrated by Figure 4-17, urbanisation places pressure on threatened species and maintenance of biodiversity (Gordon et al. 2009). Peri-urban regions also perform an important ecosystem service for cities in that they are key to their water supply catchments (Miller et al. 2009). Since 2000 this often overlooked fact has been underscored by public health water quality scares and public spending on desalination plants.

Figure 4-17 Biological assets in the Greater Brisbane metropolitan area – threatened species



Source: DSEWPAC-ERIN 2012

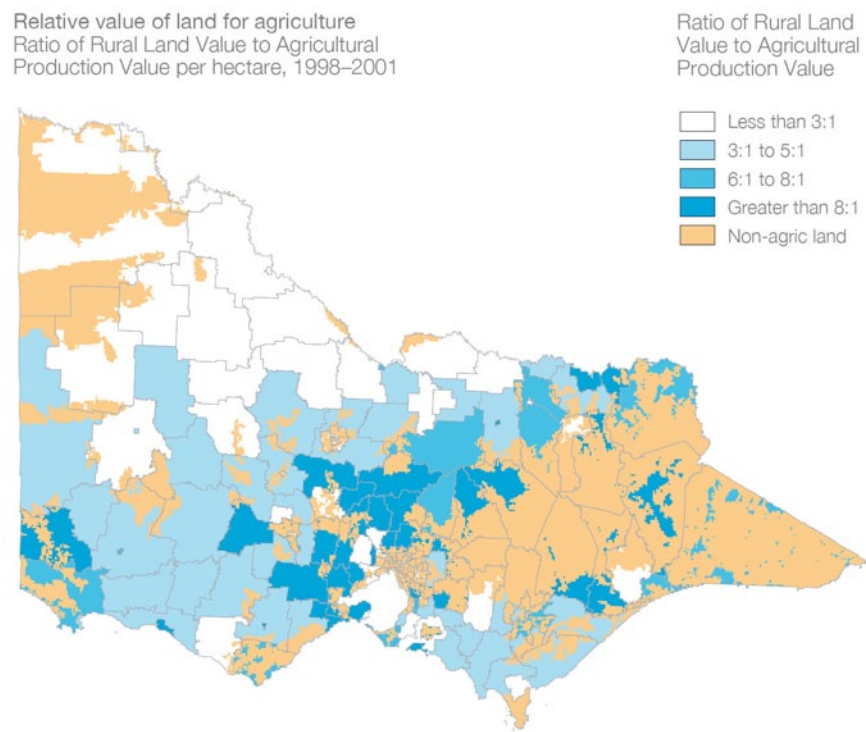
However, in Australia's major peri-urban regions, and with only a few exceptions, rural land is under constant pressure from the direct and indirect effects of urban encroachment. Despite good intentions, conventional land use policy and urban governance mechanisms appear unable to support stable peri-urban landscapes, whether for agriculture, food system resilience or natural resource management.

The most obvious examples are at the inner edge of peri-urban regions. Repeated shifting of urban growth boundaries (Millar 2011) and construction of major infrastructure projects in and through green space, rather than around it, have the effect of destabilising and fragmenting fringe landscapes and their communities (Note 3). Rather than engendering the 'certainty' that state planning systems aspire to, landholders and businesses are often left disaffected (Department of Planning and Environment 1997) and vulnerable to opportunistic development proposals.

Less obvious is the way 'consumptive' and 'speculative' values (Henderson and Rofo 2011) associated with urban property markets are spilling over into peri-urban landscapes in the form of inflated land prices. As illustrated by Victorian research shown in Figure 4-18, the land price increase effect from rural residential lifestyle demand can be seen up to 150 kilometres from the centre of the city. The implications of this phenomenon for agricultural businesses

seeking to stay ahead of the cost-price squeeze are well established in North America (Nelson 1990) and now being recognised in Australia (Barr et al. 2005).

Figure 4-18      Relative value of land for agriculture: Ratio of Rural Land Value (RLV) to Agriculture Production Value (APV) per hectare 1998–2001



Source: DSE 2005

The consequences of this phenomenon should not be underestimated. The urban price shadow surrounding Australia’s major cities arguably renders significant parts of the nation’s most environmentally favoured areas off-limits to large-scale commercial agriculture (Barr and Karunartne 2002).



## Measuring Sustainability Program

The Australian Government has established the Measuring Sustainability Program recognising that sustainability requires that the wellbeing of society - the combination of community liveability, environmental sustainability and economic prosperity - is maintained or improved over time. To measure sustainability, these three dimensions will be tracked over time. Put another way, the program seeks to ensure that the resources inherited by future generations allow for the same (or greater) levels of wellbeing as enjoyed by Australians today. This means that Australia's sustainability cannot be measured by the strength of the economy, the functioning of society or the state of our environment alone, but rather by looking at these dimensions holistically.

Under this program the National Sustainability Council was established by the Australian Government in October 2012 as an independent, expert body to provide advice on sustainability issues. The council reports to the Minister for Sustainability, Environment, Water, Population and Communities. The council's key role is to deliver a public report against a set of sustainability indicators for Australia every two years.

The program will improve information about our economy, environment and society, and the linkages between them, to better inform decisions and policy making. This will also help government and industry to take a longer-term view and consider how actions and decisions today affect the opportunities available to future generations.

## Open space and natural systems sustainability in cities

Our cities might look to be predominantly glass, concrete, roofs, bricks and tarmac, but as much as 60 per cent of the built-up area is composed of open space – recreation facilities, waterways, public facilities, road reserves and the like, which create an extensive public realm (McLoughlin 1991). Unlike buildings on private land such as homes and commercial buildings which tend not to change for decades, our public realm is constantly changing, conferring on our governments complex tasks of urban management and design. Importantly, active ecological systems continue to work within these spaces and are increasingly being brought back to life to enrich our urban lives. Concrete stormwater drains are being turned back into managed natural waterways, urban habitat protected, pollutant traps created, neglected weed-infested land turned into urban forests, recreational trails and parks systems expanded, and drains mined as a once-forgotten water resource. The better management of our green infrastructure is increasingly seen as at one with improved liveability of cities (Maheepala and Blackmore 2008).

## Green infrastructure

The public realm of Australia's cities is a network of open space reserves, rivers, drains, beaches and estuarine systems, coastal systems, parklands and shade trees in streetscapes. These natural assets also act as habitat corridors, often right into the centres of our cities. Our cities are each girt by rural landscapes that provide perishable foods and extensive parks systems while functioning as the sources of drinking water and ecological refuges. The presence of such green infrastructure enables city dwellers and visitors to enjoy the quality provision and regulation of water, air, temperature, energy and natural amenities and to gain identity from the natural settings of our major cities (Woolley 2001).

For cities, this integrated, multi-pronged approach of green infrastructure management and design (AILA 2011) can provide multiple benefits: economic (stormwater drainage); ecological (absorbing surface water run-off, trapping nutrients, filtration of pollutants and nourishing habitat); social (recreational shared path network) and cultural (enhance and protect liveability). Unlike urban planning and design processes that are more associated with new development and can be funded as a one-off process, managing our green infrastructure in the public realm requires a concerted ongoing effort through new integrated natural resource and urban management and financing systems.

The main natural resource challenges for Australia's major cities include: managing rising temperatures to mitigate the effect of Urban Heat Islands (UHI); water and air quality in the context of reduced rainfall in southern Australia and increased bushfire risk; and fostering community well-being to maintain liveability standards (State of the Environment 2011 Committee 2011). The past and present profligate use of natural resources in low-density urban form are said to provide liveability at the expense of sustainability (Newton 2012). Green infrastructure provides an active means by which we can address the imbalance of the high natural resource use through better management of our urban natural systems.

*Hobart's Sullivans Cove in the foreground and Mt Wellington in the background.*  
Image courtesy of the Tasmanian Government



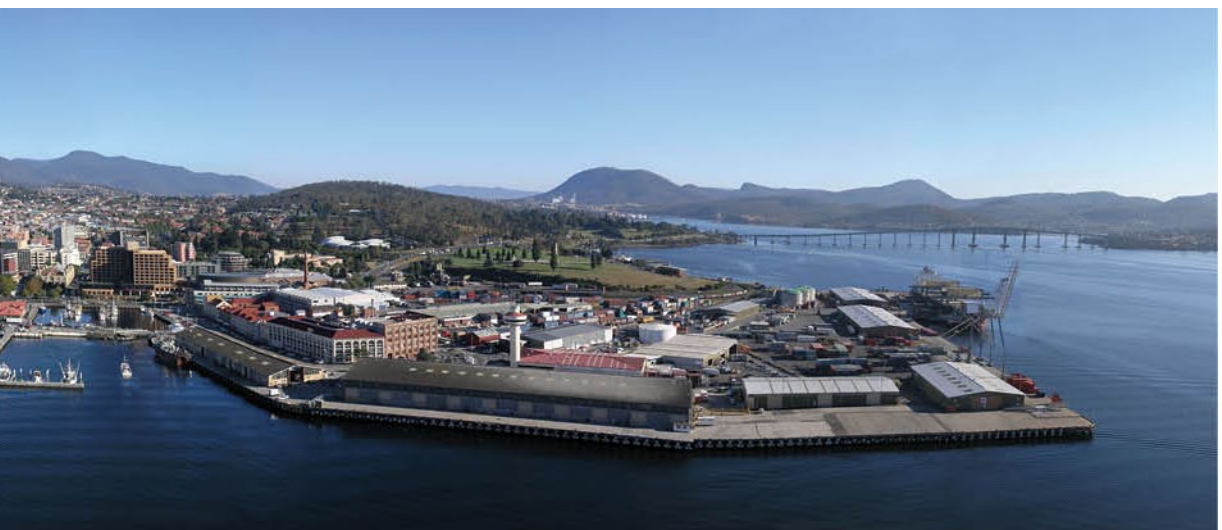


## Valuing the ecological characteristics of sustainable cities

The recent inclusion of and increased valuing of ecological characteristics in the Best Cities Ranking and Report (Economist Intelligence Unit (EIU) 2012) reflect an international shift in recognising the value of green spaces when calculating levels of liveability. Its liveability index was recently adjusted to factor in previously ignored spatial characteristics of cities. Hong Kong was ranked first and Sydney fifth in the top 10 best cities in this new ranking. Hong Kong's distribution of green spaces and access to natural assets boosted its ranking. Sydney's rating was also buoyed by these qualities; however, its low-density urban spread and varying levels of accessibility to world-class cultural assets rated poorly in the overall spatial characteristics ranking. Hong Kong performed above average in seven out of the eight categories, with one of the largest amounts of green space – 105.3 square metres per person (EIU 2012). In the land use and building category, Hong Kong ranked highest of all 22 cities surveyed across Asia.

## Liveability need not come at the expense of sustainability even in densely populated cities

Green infrastructure and spaces offer a tangible measure of sustainability within the mix of other land use attributes used to measure city quality. The wealth of cities strongly correlates to environmental performance, especially given that their capacity to invest in urban infrastructure and drive environmental initiatives (EIU 2011). Irrespective of population density, the challenge for growing cities to remain attractive in the global market is to maintain high liveability whilst achieving environmental sustainability. In a separate study, five Australian cities out of the eight most liveable from around the world showed that higher rates of liveability also occur with higher environmental resource consumption (Newton 2012). This is illustrated in Chapter 5, Liveability, in Figure 5-5.



# Ameliorating the urban heat island effect

Figure 4-19 Thermal map of Sydney taken between 1:00am and 5:00am, 6 February 2009

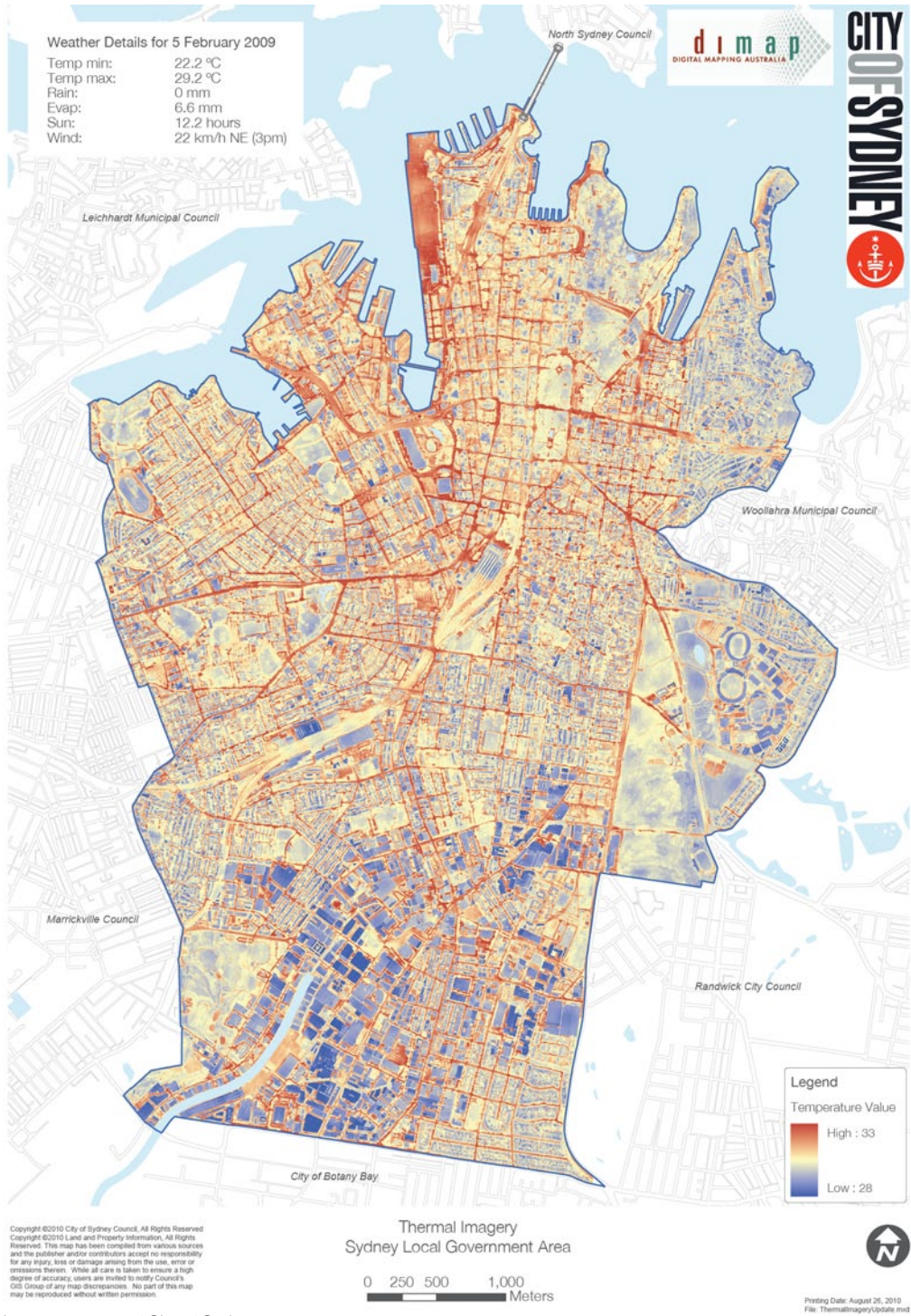


Image courtesy of City of Sydney

The City of Sydney is collecting information to see how shade trees and pavement colour affect urban temperatures. Three monitoring systems have been installed in Chippendale and Redfern. Each monitoring station contains a temperature and humidity meter, and one has a pyranometer which measures the strength of the sun. Figure 4-19 is a thermal aerial image of the City of Sydney Local Government Area taken at night. It shows the way that different road surfaces, buildings, parks and open spaces absorb heat during the day that is released overnight. It can be downloaded from the City of Sydney website

<http://www.cityofsydney.nsw.gov.au/Environment/EnergyAndEmissions>

[UrbanHeatIslandEffect.asp](http://www.cityofsydney.nsw.gov.au/Environment/EnergyAndEmissions). It is interesting to observe not only the cooler temperatures over the parks but also the significantly cooler temperatures of the buildings in the southern part of the city. These are mainly industrial buildings with lighter roof colours that reflect the sun's rays rather than converting light to heat, and thinner roofs which cool relatively rapidly.

The Urban Heat Island Effect (UHI) of cities demands critical attention from a health point of view as well, because temperature increases will drive higher energy consumption through, in particular, increased air conditioning use. Carefully designed and managed green infrastructure can moderate UHI in numerous ways. For example, vegetation has been shown to reduce rising temperatures and energy costs, improve ambient microclimate conditions, air quality and urban amenity (e.g. shade/shelter) and help restore biodiversity (Livesley et al. 2010).

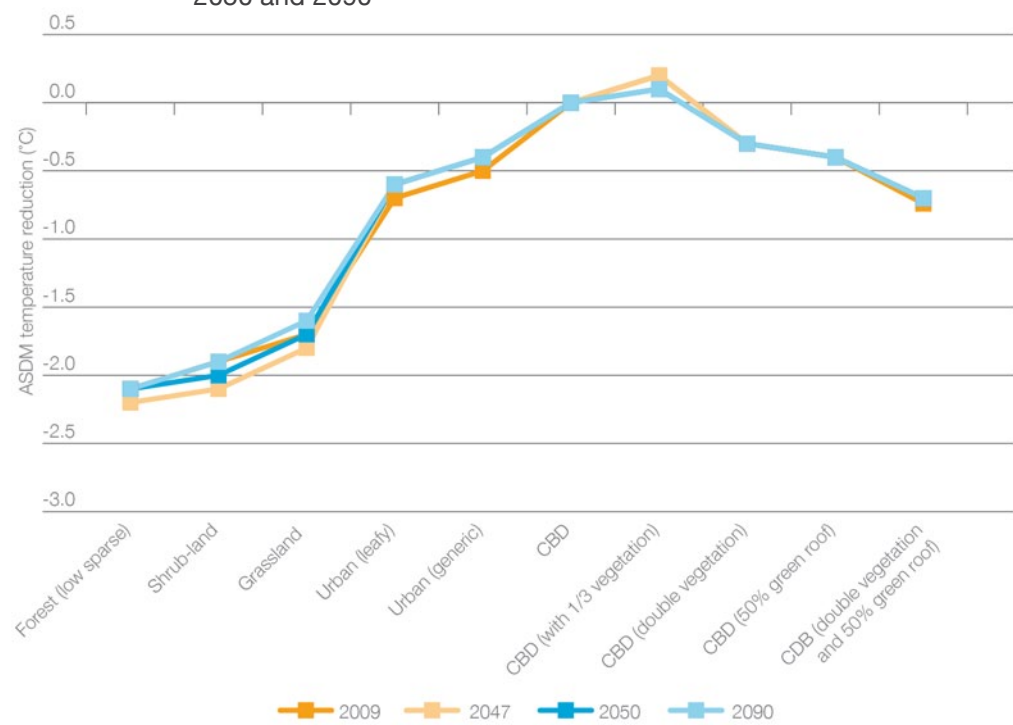
Urban trees in streetscapes, parks and residential gardens shade hard surfaces and return moisture to the air (Pardinas Diaz 2011). The greatest capacity to plant trees in cities is on streets where up to 60 per cent of lots have no tree at the front (Kirkpatrick et al. 2011). The City of Port Phillip, Melbourne's innermost bayside municipality, has identified up to 3069 'vacant' sites, of which 50 per cent are in front of residential lots, to implement its Urban Forestry strategy (City of Port Phillip 2010).

CSIRO research (Australian Nurseries 2012) predicting the potential benefit of vegetation in reducing extreme summer temperatures in Melbourne CBD found that the cooling may be in the range of 0.3°C to 2°C. As shown in Figure 4-20, different types of vegetation cover yielded a range of significant results for landscape schemes in Melbourne under different future climate scenarios:

- Suburban areas are predicted to be around 0.5°C cooler than the CBD
- A relatively leafy suburban area may be around 0.7°C cooler than the CBD
- A parkland (such as grassland, shrub-land and sparse forest) or rural area may be around 1.5 to 2°C cooler than the CBD
- Doubling the CBD vegetation coverage may reduce the Average Summer Day Maximum (ASDM) temperature by 0.3°C
- 50 per cent green roof coverage of the CBD area may result in 0.4°C ASDM temperature reduction. An ASDM temperature reduction of around 0.7°C may be achieved by doubling the CBD vegetation coverage and having 50 per cent green roof coverage in the CBD area.



Figure 4-20 Predicted reductions in the Average Summer Daily Maximum temperature for different urban forms and vegetation in 2009, 2047, 2050 and 2090



Source: Australian Nurseries 2012

In 2011, the South Australian Government's *Green Infrastructure Working Paper* aimed to develop a coordinated approach to managing Adelaide's rising city heat issues over the next 30 years (Oxygen 2011). The report responds to and analyses different types of growth areas, density levels, land use and built form across Greater Adelaide. It also integrates other sustainable urban initiatives such as Transit Orientated Development Corridors and small-scale urban Infill, Fringe and Townships (Oxygen 2011). The *City of Adelaide 2012–2016 Strategy Plan* has also undertaken detailed studies to address climate change exacerbated Urban Heat Islands.

## Greening the West Program 2011 (City West Water, Victoria 2011)

*Greening the West* seeks to improve health, social outcomes and enhanced liveability for communities in Melbourne's west. It is taking a regional approach to urban greening, supporting projects and activities that deliver increased vegetation and access to quality green space.

The initiative is backed by City West Water and involves a partnership with nine local government councils, government agencies, researchers and industry and community stakeholders. Stormwater and recycled water options are being explored to support greening projects. A noteworthy attribute is the planned use of detailed satellite mapping techniques - Landsat TM (infrared) and MODIS (land surface temperature) to identify specific areas of increased temperature (built-up, impervious surfaces) and cooler zones (vegetated, permeable surfaces) (Figure 4-21(a)). The methodology overlays 'hot-spots' with Department of Health maps of vulnerable populations to prioritise vegetation planting in these areas Figure 4-21(b).

**Figure 4-21** (a) Heatwave vulnerability index map for Melbourne and (b) Index of relative socioeconomic disadvantage and dwelling structure in the City of Maribyrnong and priority environmental management locations

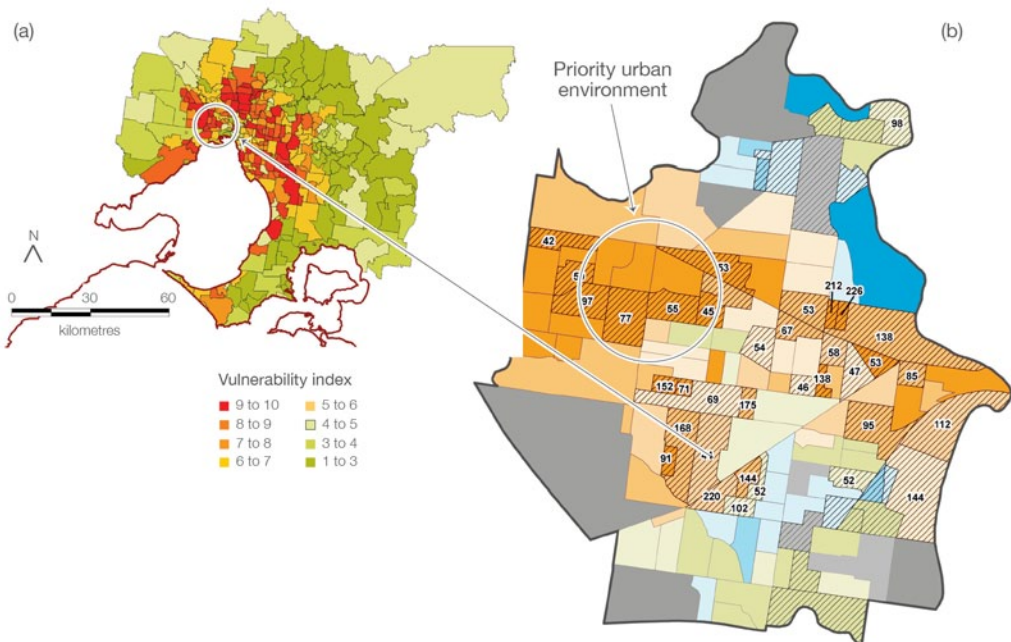


Fig 4-21(a) Source: Loughnan et al. 2012

Fig 4-21(b) Source: Dedman (Department of Health) 2011

# Sustainability rating tools for the built environment

2012 has seen the further development of sustainability rating tools for the built environment. A report titled *Policy's Dramatic Impact on Green Buildings: the global hotspots*, released in June 2012, ranked Australia as one of the top three countries for sustainable building construction out of 21 countries that account for 80 per cent of the world's GDP (Lux Research 2012).

Another report, the 2012 *Global Real Estate Sustainability Benchmark* (GRESB), compared the environmental sustainability of Real Estate Investment Trusts (REITs) around the world. Almost 450 property companies and funds participated in the survey, covering 36,000 properties and representing US\$1,322 billion in assets.

Respondents from Oceania (Australia and New Zealand) represented US\$231 billion in assets or 75 per cent of the local REIT market. Our region performed more strongly than any other global region as shown in Figure 4-22. 'The Australian market is quite mature in tackling sustainability issues, which is reflected in very high scores for aspects like sustainability management, assessing sustainability risks and opportunities, and the deployment of Environmental Management Systems. A stunning 95 per cent of respondents have internal resources dedicated to sustainability' (GRESB 2012 p. 30).

Figure 4-22      GRESB Four-Quadrant Model



Source: GRESB 2012

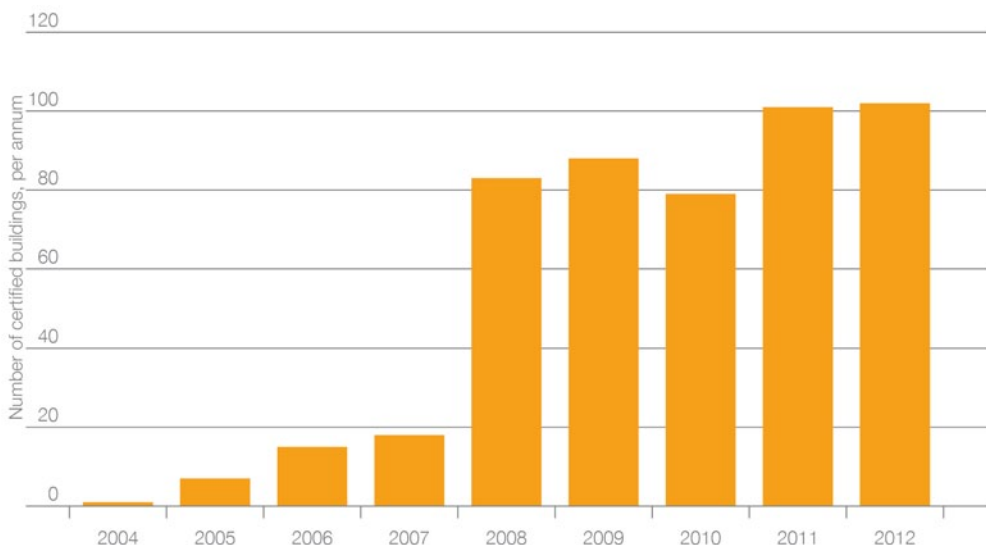
## Sustainability rating tools for the built environment

### Green Star building rating tools

Green Star rating tools can be used to rate the environmental sustainability for the design and construction of buildings including commercial offices and multi-unit residential, health care and education buildings. The ratings are based on energy, water, waste and other environmental parameters. A Green Star Performance rating tool is currently being developed.

Almost 500 building projects have been Green Star certified, totalling more than 7.3 million square metres of floor space (Figure 4-23). Projects are rated 4 Star best practice, 5 Star Australian excellence or 6 Star world leadership. Recent 6 Star rated buildings include 1 Bligh Street in Sydney, 2 Victoria Avenue in Perth and The Gauge in Melbourne.

**Figure 4-23** National number of Green Star certified projects, per annum



Source: Green Building Council of Australia, as at 28/8/2012

### Infrastructure Sustainability rating tool

The Australian Green Infrastructure Council ([www.agic.net.au](http://www.agic.net.au)) launched its Infrastructure Sustainability tool for evaluating sustainability across design, construction and operation of transport infrastructure such as roads, bridges, railways, busways, airports, ports, footpaths and cycleways. It also covers communications, electricity, water storage and supply, sewerage and drainage. Projects are rated as good, excellent or leading.

### Green Star – Communities rating tool

The Green Building Council of Australia ([www.gbca.org.au](http://www.gbca.org.au)) launched its Green Star – Communities PILOT rating tool in June 2012, an independent, national rating tool for communities, precincts and neighbourhoods. Green Star – Communities incorporates 38 credits under categories of liveability, economic prosperity, environment, design, governance, and innovation. The Infrastructure Sustainability tool and Green Star – Communities both incorporate the Australian Urban Design Protocol ([www.urbandesign.gov.au](http://www.urbandesign.gov.au)) which is discussed in Chapter 5.



*Loop, Belconnen Fresh Food Markets, ACT is the first project registered for the Green Star-Communities PILOT tool.*  
Image courtesy of Rock Development Group

## Tax concessions for sustainable commercial buildings

From 1 July 2012, managed investment trusts that hold only new, energy-efficient commercial buildings are eligible for a 10 per cent withholding tax rate. The new tax concession is available to managed investments trusts that hold office buildings with a 5-star Green Star rating or a predicted 5.5 star NABERS rating, and retail centres and non-residential accommodation that meet equivalent standards.

## NABERS

The National Australian Built Environment Rating System (NABERS) measures an existing building's environmental performance during operation. It rates a building on the basis of its measured operational impacts in categories such as energy, water, waste and indoor environment. NABERS can be used to assess the sustainability of office buildings, office tenancies, hotels, shopping centres and homes.

From 1 November 2011 all commercial office space over 2,000 square metres must have energy efficiency ratings (based on NABERS) disclosed to potential buyers and tenants.



## Carbon neutral commercial building at 41 Exhibition St, Melbourne

41 Exhibition Street in Melbourne is a new purpose-designed building for the Australian Institute of Architects in Victoria. It aims to be a 'carbon neutral' building, which will be measured using a detailed Total Carbon Assessment for its whole life cycle. It is also aiming for a 5 Star Green Star rating.

Construction is well underway and the project is due for completion in late 2013.

The project incorporates an efficient building envelope with high-performance glazing, energy efficient heating and cooling, rainwater harvesting, low water usage fixtures, waste management, bicycle parking and showers (in lieu of onsite car parking), and transport plans for employees and visitors to the building.

The actual carbon impact will be measured each year and savings will be achieved through reduced energy and water usage, the use of sustainable materials, the purchase of appropriate green power, and a 30-year plan to offset all the measured embodied energy in the building materials.

A Sustainability Charter within the Owners' Corporation rules will commit the owners and tenants to the goal of carbon neutrality.

*41 Exhibition Street, Melbourne.*

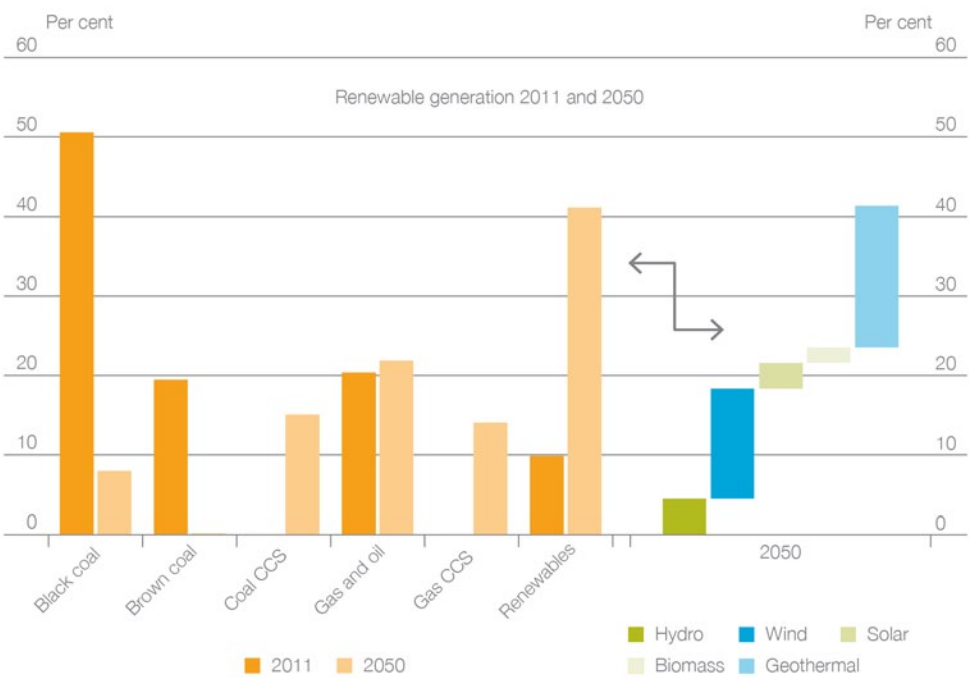
Image courtesy of the Australian Institute of Architects.



# Energy

In addition to adapting to climate change and developing resilience to associated extreme weather events, Australia needs to mitigate against climate change by reducing its greenhouse gas emissions. In November 2012 the Australian Government released the Energy White Paper, *Australia's Energy Transformation*. The paper proposes four priority areas for further action to address challenges confronting Australia's energy sector. One of these is national emission reduction targets of at least five per cent below 2000 levels by 2020 and 80 per cent below 2000 levels by 2050. These were modelled by Treasury which found that 'the Government's 2050 target represents a fair contribution by Australia to the global goal of holding temperature increases to less than 2°C, and is consistent with the target adopted by countries such as the United Kingdom' (The Treasury 2011 p. 2). Treasury's modelling predicts that, with carbon pricing, renewable energy as a source of electricity generation will grow from approximately 10 per cent of total generation in 2011 to approximately 40 per cent of total generation in 2050 (or greater under a 'High price' scenario), as shown in Figure 4-24.

Figure 4-24      Renewable energy sources share of energy production forecasts 2010 and 2050



Note: Graph depicts 'Core policy' scenario.  
Source: SKA and ROAM in Treasury 2011



New approaches to energy production and distribution such as Distributed Energy and Intelligent Grids are responding to the need to reduce electricity costs in cities (see box on Sydney's Green Infrastructure Plan). 'Distributed generation including co-generation and tri-generation can be a cost effective and economically efficient alternative to conventional supply arrangements, with the advantages of greater efficiency of use of the primary fuel, avoidance of transmission and distribution losses and potential reduction of the need for network augmentation. However, factors such as lack of integrated planning and design for new buildings and uncertainty among users as to legal and commercial aspects of such projects can act as barriers to the implementation of cost-effective and economically efficient distributed generation' (Australian Government 2009).

### City of Sydney Green Infrastructure Plan

The City of Sydney has an ambitious Green Infrastructure Plan to reduce greenhouse gas emissions by 70 per cent, meet 100 per cent of electricity demand by local generation, and supply 30 per cent of water by local capture, by the year 2030. The city has a number of draft master plans, either on exhibition or in preparation, which form the overall Green Infrastructure Plan. A key project within these plans is the Green Square project, which covers 278 hectares and introduces Australia's first large-scale low-carbon trigeneration energy network. Trigeneneration is an energy-efficient decentralised system for generating electricity, which also simultaneously provides heating and cooling. The project has been supported under the Australian Government's Liveable Cities Program.

### Decentralised energy – trigeneration and renewable energy

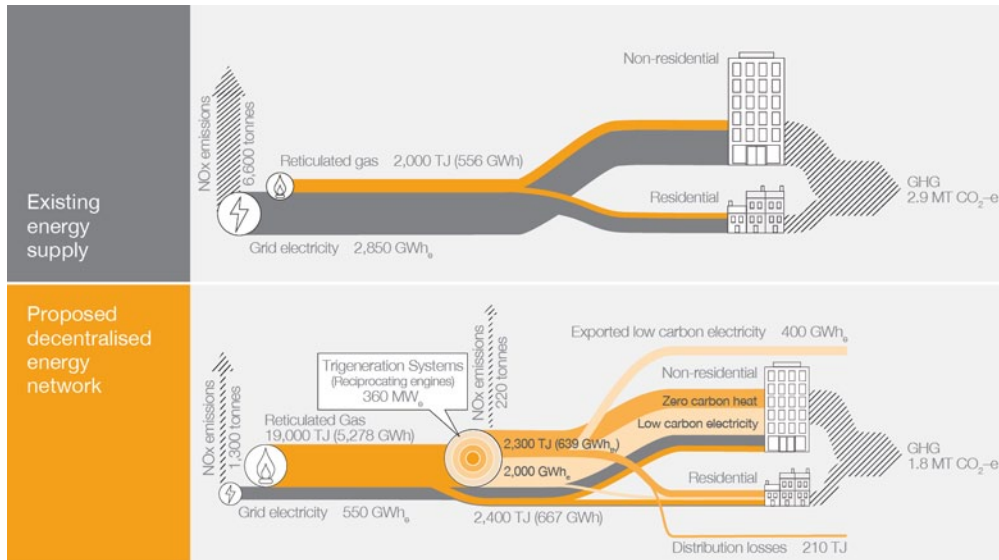
Currently, four-fifths of the City of Sydney's greenhouse gas emissions come from the production of electricity, primarily by coal-fired power stations in the Hunter Valley. Two-thirds of primary energy used by power stations is lost into the atmosphere via cooling towers as waste heat, with further losses across the grid as the electricity is transmitted.

According to the plan, by 2030, trigeneration will provide 70 per cent of the City of Sydney's Local Government Area electricity requirements and reduce overall greenhouse gas emissions by 33 per cent, electricity consumption by 30 per cent and electricity peak demand by 60 per cent.

Trigeneration is nearly three times as efficient as coal-fired power stations because it uses the waste heat from local electricity generation to both heat and cool buildings. The rest of the city's reductions in greenhouse gas emissions will come from energy efficiency, renewable energy and other carbon reducing measures such as advanced waste treatment and sustainable transport.

Renewable energy will provide 30 per cent of the city's electricity requirements and reduce overall greenhouse gas emissions by 31.5 per cent by 2030. Up to 55 per cent of this renewable electricity target can be delivered within the local government area. In addition, enough renewable gases and fuels can be sourced from renewable feedstock, primarily waste, to replace 100 per cent of the natural gas needed for trigeneration in the future.

Figure 4-25 Schematic of decentralised energy generation



Source: City of Sydney 2012, Decentralised Energy Master Plan – Trigeneration 2010–2030, ([www.cityofsydney.nsw.gov.au/Council/OnExhibition/TrigenerationMasterPlan.asp](http://www.cityofsydney.nsw.gov.au/Council/OnExhibition/TrigenerationMasterPlan.asp))

## Decentralised water

The Decentralised Water Master Plan will provide for a 30 per cent reduction in mains drinking water usage with a city-wide recycled water network; a 50 per cent reduction in sediments and suspended solids; and a 15 per cent reduction in nutrients currently discharged into waterways from stormwater run-off.

## Advanced waste treatment

Using advanced gasification techniques, waste going to landfill can be reduced by up to 98 per cent. The Advanced Waste Treatment Master Plan will set out the waste treatment process and renewable gas resource from non-recyclable waste.

## Automated waste collection

The Automated Waste Collection Master Plan will identify locations for automated waste collection and utilisation opportunities. Separated recycled and non-recycled waste is evacuated via underground pipes at 70 kilometres per hour to receiving stations, thereby replacing the many garbage truck movements throughout the city.

Where automated waste collection has been implemented in other world cities there has been a 90 per cent reduction in waste collection transport movements, which has improved community amenity (such as reduced noise) and reduced transport emissions.

### Leading by example

The City of Sydney has already reduced greenhouse gas emissions in its own buildings by 18 per cent from 2009 to 2011 through building energy efficiency retrofits. Further work is currently underway which will reduce emissions by another 24 per cent, resulting in total emission reductions of 42 per cent by the end of 2012.

The city is also replacing its street and public domain lighting with light emitting diodes (LEDs) which will reduce emissions in its street lighting by 51 per cent. The city has accepted a tender for what will be the largest concentration of solar photovoltaics on buildings in Australia. The contract will be completed by 2014.

Further information is available at  
<http://www.sydney2030.com.au/development-in-2030/city-wide-projects>.

Figure 4-26 Proposed Solar Photovoltaic Roof, Town Hall House (Sydney)



Image courtesy of City of Sydney

## Smart Grids

Smart grids are electricity networks that can intelligently integrate the actions of all users connected to them in order to efficiently deliver sustainable, economic and secure electricity supplies. They have great potential to improve the efficiency of the electricity sector and transform the way Australians use energy in homes and businesses. Benefits include:

- better connection and operation of generators of all sizes and technologies
- consumers playing a part in optimising the operation of the system
- providing consumers with greater information and choice of supply
- reducing the environmental impact of the whole electricity supply system
- enhanced levels of reliability and security of supply.

Were smart grid applications to be adopted around Australia they could deliver a reduction of up to 3.5 megatonnes of carbon emissions per year (Department of Climate Change and Energy Efficiency 2010). Newcastle will be the site of Australia's first commercial-scale smart grid, in the \$100 million Smart Grid, Smart City demonstration project that commenced in mid-2010. It is expected to lead to Australia-wide advances in energy efficiency. The main demonstration site is in the city of Newcastle, with other parts of the trial to be conducted in the rural town of Scone, and in Homebush, Ku-ring-gai and the Sydney CBD.

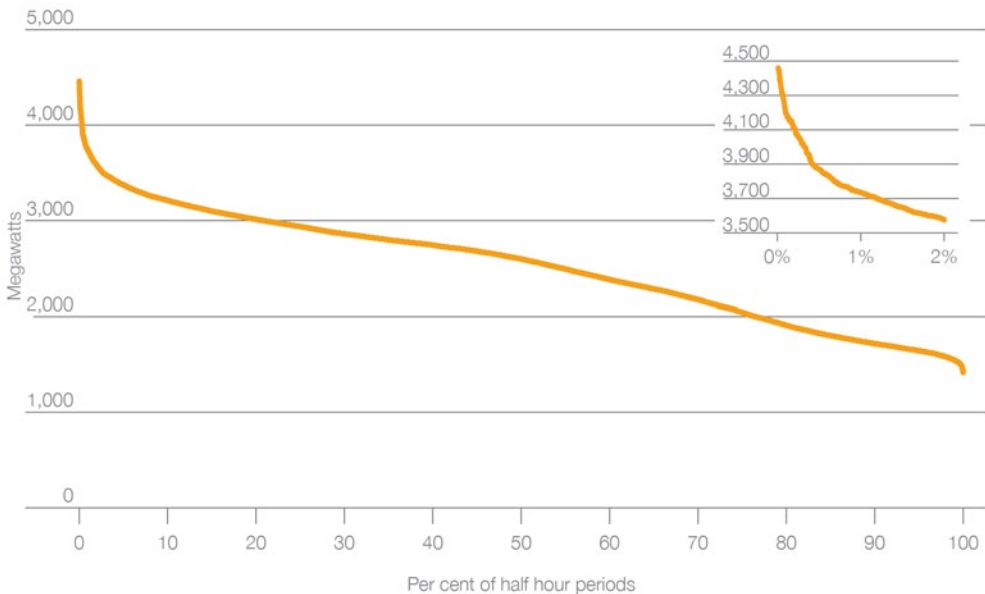
The project will include participation from the community and will demonstrate and test the integration of a range of new technologies such as smart grids, smart meters, electric vehicles and ceramic fuel cells. It will gather information about the costs and benefits of smart grids to help inform future decisions by government, electricity providers, technology suppliers and consumers across Australia.

## Peak Energy Demand

One noteworthy factor in the declining productivity and rising costs of Australia's electricity system is the need to build extra capacity to meet growth in peak demand, which is growing more quickly than overall energy consumption. In Brisbane, the difference in electricity demand that can occur between hot days and cooler days, underpinned by air-conditioning usage can be as much as 65 per cent higher (Department of Resources Energy and Tourism 2011). The Queensland Government has estimated additional costs of \$3.5 million per megawatt for incremental network and generation capacity to meet peak demand growth (Department of Employment, Economic Development and Innovation 2011).

*State of Australian Cities 2011* pointed to the peak electricity demand issues occurring during heatwaves or consecutive days of higher than normal temperature. Energex Limited found from analysis of its electricity network in Brisbane that the top 11 per cent of network load occurred for less than 1 per cent of the year (Figure 4-27) and that servicing this peak consumed roughly half of the capital program network investment (Energex 2012). Rising energy costs are caused by a range of factors including sharp increases in consumer use of energy-intensive appliances such as air conditioners. The number of air conditioners installed across Australia in the last five years has grown by 1.7 million or around 36 per cent (Department of Resources, Energy and Tourism 2011).

Figure 4-27 Electricity peak load duration Brisbane 12 months to 30 June 2012



Source: Energex Limited 2012

Solar air conditioning is a prospective future low emission technology for Australia. It would utilise heat from solar thermal collectors to generate cooling for buildings and would displace fossil fuel derived electricity, which would otherwise be consumed in conventional mechanical air conditioners. It would be especially useful as a ‘peak shaving’ technology, as it works with maximum efficiency during the hottest part of the day. Solar air conditioning has been technically proven for many years and can be constructed from readily available solar collectors and absorption chillers which use environmentally friendly refrigerants and have a low electricity demand. As yet solar air conditioning is not cost competitive.

## Townsville: *Solar City*

Townsville is one of seven *Solar Cities* across Australia, part of the Australian Government's Solar Cities Program that works with all levels of government, industry and community to change the way we think about and use energy.

In 2011, Townsville won the Queensland Regional Award from the International Association for Public Participation (IAP2) Australasia, Project of the Year. These awards recognise and encourage projects at the forefront of public participation. The project is an electricity network expansion deferral initiative focused on Magnetic Island, which consists of energy behaviour change campaigns, residential trials, the installation of new and renewable technologies as well as commercial building refits in the Townsville CBD and surrounds.

The project has seen a reduction in peak electricity demand on Magnetic Island by 44 per cent during the busiest time of year. This means that \$17 million of investment in an additional underwater power transmission cable can be deferred for at least eight years. Overall energy consumption is now 12 per cent less than the peak annual usage, having returned to 2005 levels. A total of 54,000 tonnes of greenhouse gas emissions were saved by 30 June 2012.

The Townsville RSL stadium is Townsville's largest solar project, with the installation of more than 1800 solar photovoltaic panels on its roof and shade structures in the car park by Ergon Energy. The 348kW solar system will cover 90 per cent of the stadium roof space and the entire system will produce about 1400 kilowatt hours of electricity generation each day, enough to supply somewhere between two-thirds and all of the daytime use of the stadium, or between one-third and half of the daily use.



*Townsville Harbour*

Image courtesy of Townsville City Council

The Townsville City Council Citysolar Program aims to integrate sustainability into everyday lives.

The Program is underpinned by three principles:

1. Communicating about sustainability in ways that engage citizens and encourage them to foster sustainable change and adopt clean energy technologies
2. Involving the community in sustainability initiatives and programs
3. Building the community's capacity to undertake action towards a more sustainable future.



Under the Program, there are a range of initiatives to help residents to reduce energy use in the home. The Townsville Residential Energy Demand (TRED) project is based on research outcomes and community engagement findings and is being developed in consultation with Townsville's industry. Three behaviours were selected to become part of the project:

1. Cool roofs (painting the roofs white, or a light colour to reflect heat)
2. Shade planting (using trees and shrubs for shading the home)
3. Low-carbon hot water (switching from electric hot water systems to a less energy-consuming system).

With respect to cool roofs, the 'Cool Your Roof' Pilot Program was developed following extensive research conducted as part of the TRED project, which was based on world leading behaviour change methodologies.

Results of the Program found that roofs that were painted as part of the pilot have been effective in reducing house temperatures and the associated electricity use as shown in Table 4-5, in line with other national and international studies on cool roofs.

**Table 4-5**                      **Summary of temperature reductions across participating pilot program houses**

Comparison of two similar days (average of houses)	Temperature reduction (°C)
Highest roof cavity temperature reduction during the day	4.9 – 17.5
Average daytime roof cavity temperature reduction (9am–9pm)	3.2 – 15.3
Highest internal temperature reduction during the day	0.8 – 2.5
Average daytime internal temperature reduction (9am–9pm)	0.6 – 1.5

*"We had the roof painted in November when the weather was starting to warm up. We could not believe how much cooler the house was the day after it was painted. The house is normally all locked up during the day and used to be quite hot when we got home in the afternoon. After the painting the house was cool to walk into at the end of the day. We found that when home we did not put the fans on until later in the day and there was reduced use of air-conditioning ... I have certainly passed the word onto friends and know of a couple that have had their roofs painted." – (Pilot Program Participant with a single story 1980s era low-set brisbane-block house in Condon)*

In 2012 Townsville was one of 24 cities world-wide to be selected for an IBM Smarter Cities Challenge. The IBM Challenge enables city communities to work together to better plan and develop a smart, sustainable and energy-efficient city through integrating technologies, data, social media/networks and behaviour change.

Other Australian *Solar Cities* include Adelaide, Blacktown (Sydney), Central Victoria (including Ballarat and Bendigo) and Perth. The Citysolar Program runs until 2013 and trials new models for sustainable electricity supply and use such as cost-reflective pricing trials and community education.



## Electricity and gas consumption

The Australian Energy Regulator (2011) has estimated that network costs were the largest single contributor to residential electricity bills in 2011, due to increased investment to upgrade and replace ageing assets (Department of Resources Energy and Tourism, 2011).

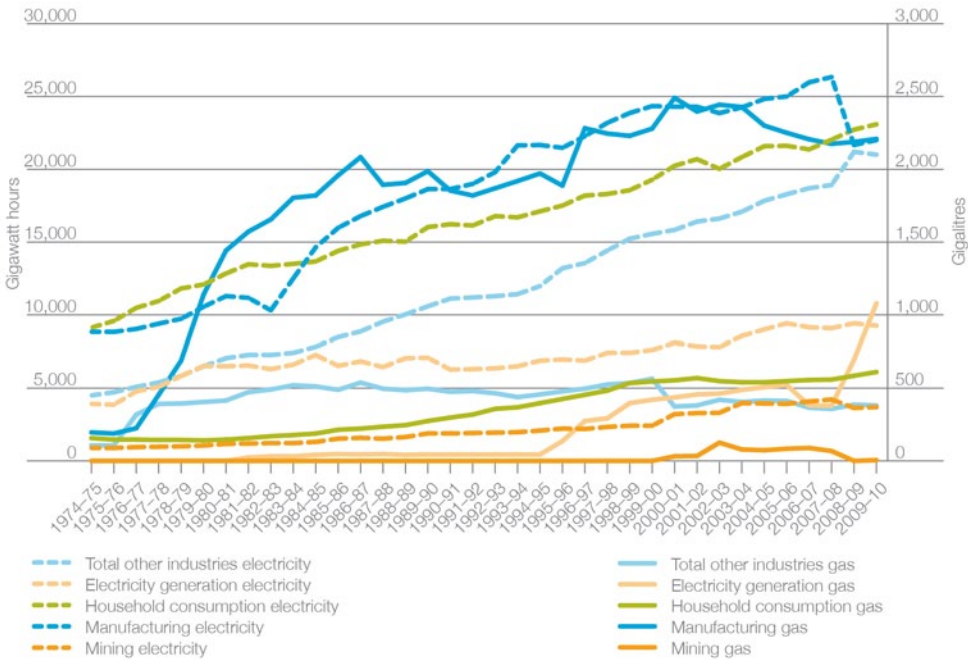
Figures 4-28 to 4-34 show the electricity and gas consumption of states and territories (as a proxy for their major cities) by broad industry sector, including households, from 1974–75 to 2009–10. The figures show that household consumption of electricity has been fairly steadily increasing (possibly in line with population growth), while household gas consumption has remained largely steady. In other sectors of the economy energy use is changing.

Electricity consumption shows a general increase overall for all states and territories and most industry sectors. In terms of electricity consumed by manufacturing industry, all states with the exception of Queensland show a noticeable drop in consumption during 2007–08, coinciding with the Global Financial Crisis. Electricity consumption by other industries apart from manufacturing has steadily increased in all states and territories with the exception of Victoria. Interestingly, all states and territories except Victoria and the Northern Territory show very similar rates of increase in electricity consumption by non-manufacturing industries and household sectors.

The industry sectors showing the biggest changes in electricity consumption across most states and territories are the mining sector and the electricity generation sector itself. For example, Queensland's electricity generation sector's peak consumption in 2003–04 was almost 12,000 gigawatt hours, and apart from one fluctuation, has been trending down since then. Western Australia shows a decline for this sector in recent years.

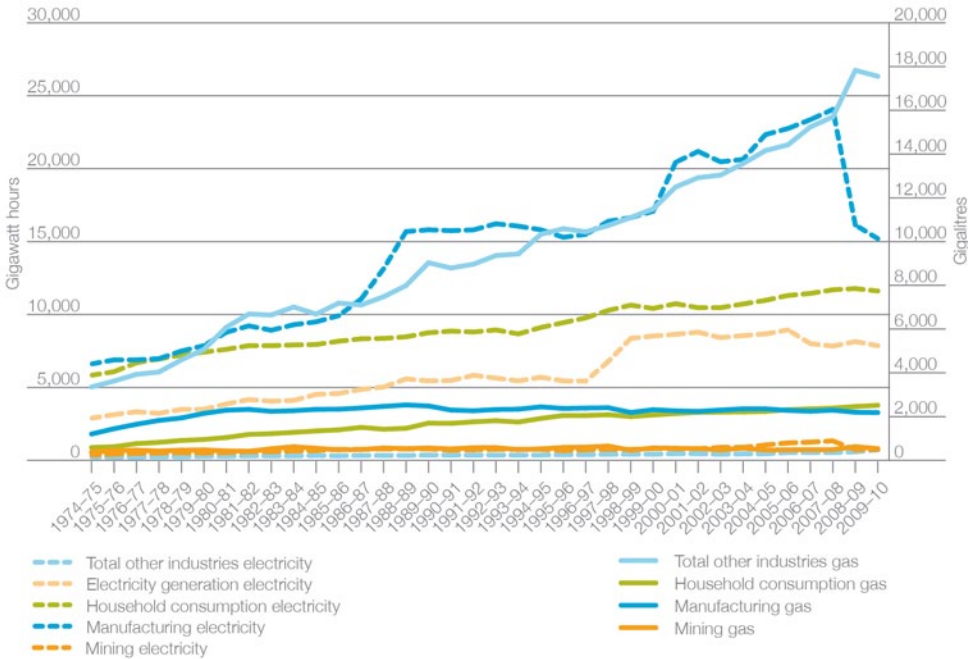
Some states and territories have seen an increase in gas consumption for some industry sectors which, if it is replacing coal, is a positive for sustainability because burning gas produces less greenhouse gases than coal-fired power stations. Western Australia and the Northern Territory, for example, show increases in gas consumption by the mining industries since 2004–05 of over 160 per cent. Gas consumed by the manufacturing industries has increased in all states for which there is data, with the exception of Victoria and South Australia, which have remained more or less steady since the 1970s. Overall, Victoria has the highest rate of gas consumption of all states and territories across all sectors except mining. Victoria's total other industries gas consumption peaked at 17,829 gigalitres in 2008–09, roughly three times the consumption of the next highest user, Western Australia's mining industries.

Figure 4-28 NSW electricity and gas consumption by industry sector



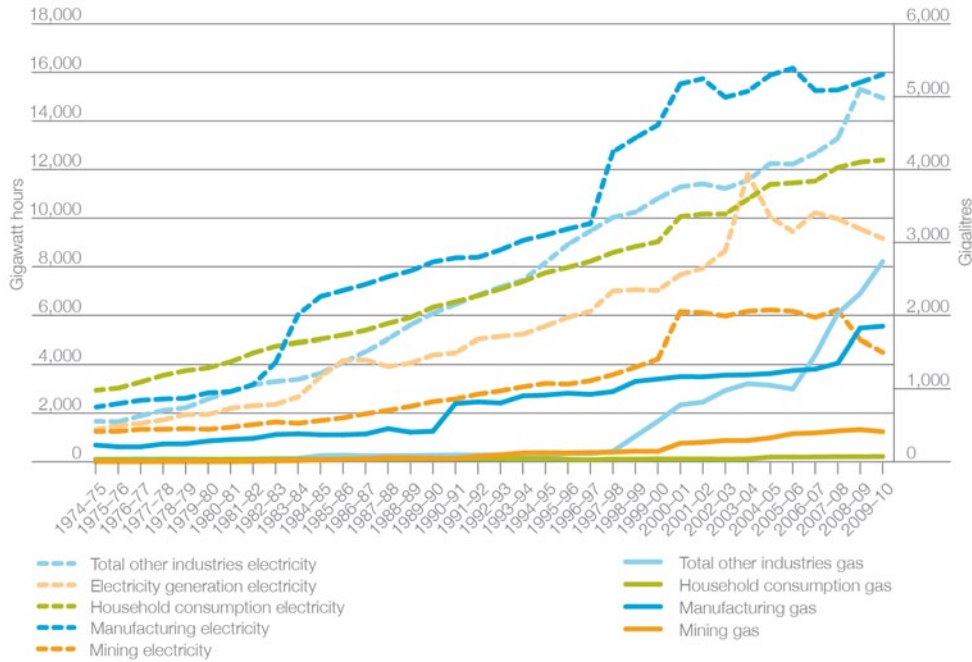
Note: Includes ACT.  
Source: BITRE 2012

Figure 4-29 Victoria electricity and gas consumption by industry sector



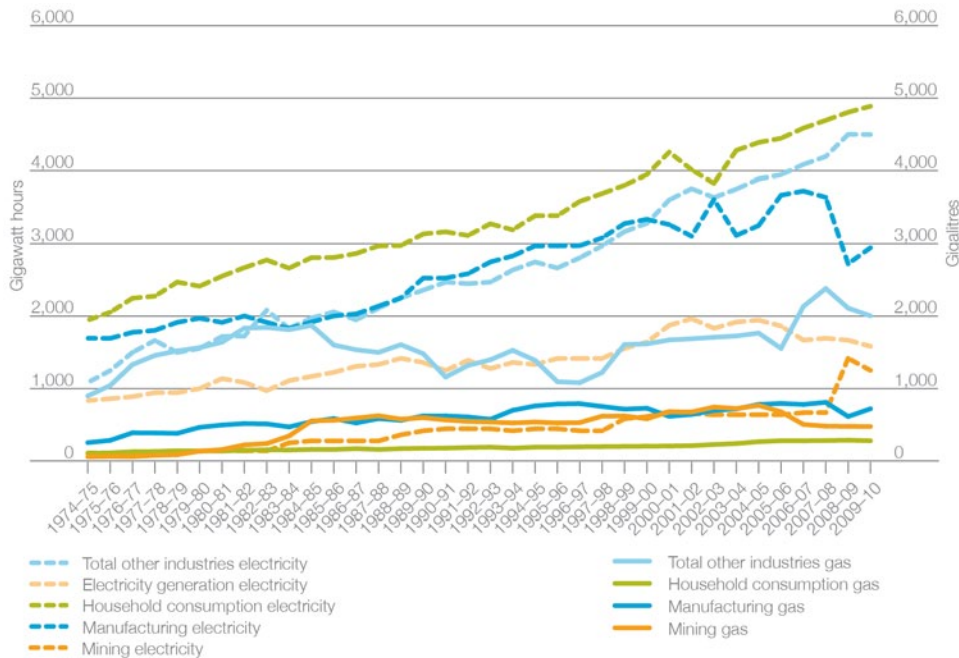
Source: BITRE 2012

Figure 4-30 Queensland electricity and gas consumption by industry sector



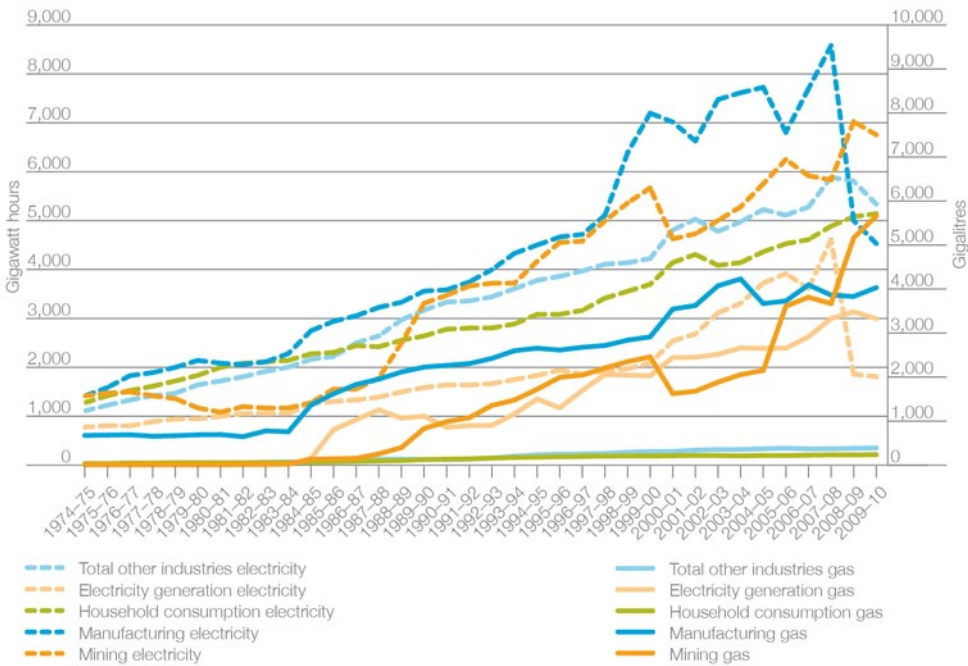
Source: BITRE 2012

Figure 4-31 South Australia electricity and gas consumption by industry sector



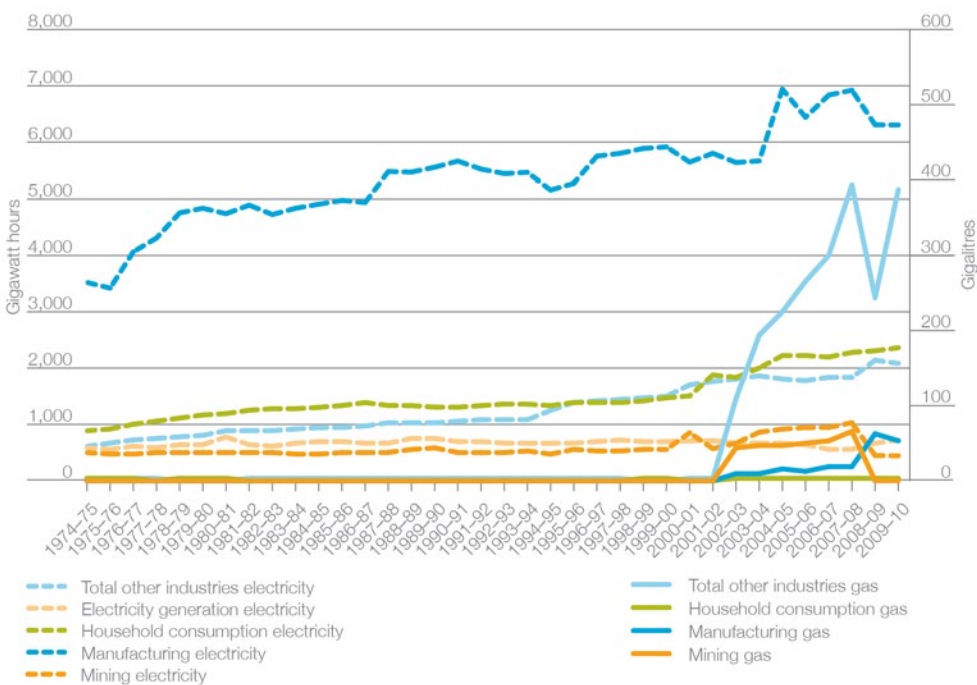
Source: BITRE 2012

Figure 4-32 Western Australia electricity and gas consumption by industry sector



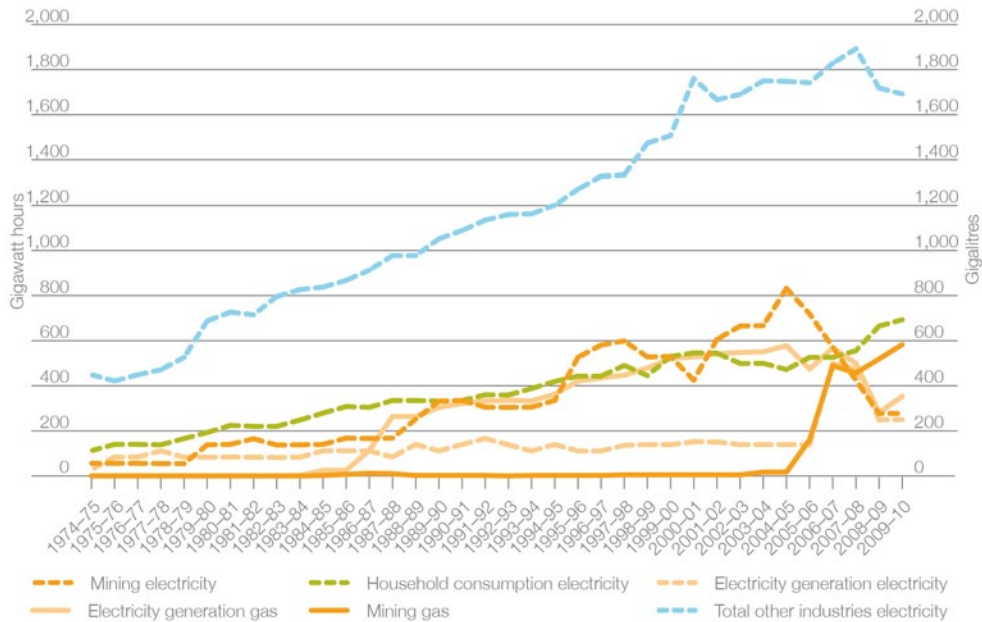
Source: BITRE 2012

Figure 4-33 Tasmania electricity and gas consumption by industry sector



Source: BITRE 2012

Figure 4-34 Northern Territory electricity and gas consumption by industry sector



Note: Manufacturing N/A for Northern Territory.

Source: BITRE 2012

## Conclusion

This chapter explored the relationship between cities and the natural environment, particularly analysing the changing temperature and rainfall patterns that are linked to climate change. The Urban Heat Island effect associated with larger cities is of particular concern as city temperatures rise. Actions are currently underway through a range of initiatives to understand and counteract this phenomenon along with other urban perils such as bushfires and flooding. In this regard the role and importance of 'green Infrastructure' is increasing in prominence.

Cities' energy usage was also touched upon, with cities such as Townsville successfully piloting various ways to improve the efficiency with which they use energy and reduce the demand on non-renewable energy sources. In general, Australian cities are managing these issues with varying levels of sophistication, but it is clear that all spheres of government recognise the need to plan and manage urban systems in a manner better integrated with natural systems.

## Chapter 4 References

### Notes

Note 1 – See for example, a recent series in *The Age* by Royce Millar and Melissa Fyfe; Village Well's October 2011 forum 'On the Edge: A forum on food and sustainability around Australian cities'; The Australian Farm Institute's May 2012 conference 'Managing the future of Australian farm land'; Drew, C; and McEvilly, G. 2011. Issues Facing Vegetable Production in Peri-Urban Areas – Review and Scoping Study. (HAL Project no. VG10059) Report prepared for Horticulture Australia Limited by Scholefield Robinson Horticultural Services Pty Ltd. Fullarton, South Australia; the Victorian Parliament's 2010 Inquiry into Sustainable Development of Agribusiness in Outer Melbourne; and South Australia's proposed Character Preservation policies for the Barossa Valley and McLaren Vale.

Note 2 – See for example, The Peri-urban Regions Platform in Europe (PURPLE); The Toronto Global Greenbelts Declaration; Agriculture in an Urbanising Society Conference;

Note 3 – See for example, the Northern Expressway through Virginia, Adelaide.

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## Chapter 5

Liveable cities support the health, wellbeing and the quality of life of people who live and work in them. The way they are planned, designed, built and managed can enhance or detract from liveability. The physical characteristics that contribute to the liveability of cities include land use, built form, quality and conservation of public spaces and natural environments, efficiency of transport networks, accessibility to work, education, health and community services and social and recreational opportunities.

Less tangible to city liveability are broader societal and cultural characteristics of places and communities within cities. The cultural characteristics of cities reflect both historical and contemporary ways of living, the values and meaning attached to places, objects, activities and events, the application of technologies and the interaction with the natural environment in which cities are located.

The social aspects of cities include social capital and social cohesion that contribute to a sense of trust and inclusion. While the physical, social and cultural characteristics of cities are what define and distinguish them, there is a growing consensus about indicators of positive social outcomes that can be used to measure liveability.

One of the three primary goals of the National Urban Policy is to enhance the liveability of our cities by promoting better planning, urban design and affordable and equitable access to resources and opportunities including recreational, cultural and community facilities. In working towards this goal the National Urban Policy sets out four broad objectives – to:

- facilitate the supply of appropriate mixed income housing
- support affordable living choices
- improve accessibility of movement around cities and reduce dependence on private motor vehicles
- support community wellbeing.

To achieve liveability, or what internationally renowned architect and urban designer Jan Gehl (2010, p. 6) calls 'better urban quality', there must be 'greater focus on the needs of the people who use cities'. It is necessary, therefore, to understand the different needs of diverse groups of people who live in our cities, and how their needs may change over time. In this way, Australians will enjoy more liveable cities.

# Summary indicators

Dimension	Indicators
Quality of life	World Happiness Index Mercer Quality of Living Index The Economist Intelligence Unit Liveability Indexes
Global city liveability Resident-assessed liveability	The Economist Intelligence Unit Liveability Indexes Property Council of Australia City Liveability Index
Wellbeing	Happy Planet Index
Equality	Australian Early Development Index
Health	Life expectancy Indigenous population Walkability
Safety	Road safety Crime rates
Affordability National Centre	Mercer Cost of Living Index NATSEM Cost of Living Housing costs and affordability
Accessibility	Access to public transport services Active Travel Access and use of broadband internet
Community wellbeing	Participation in sporting, cultural and leisure activities

## Key findings

- Australia ranks in the top five countries across almost all of the dimensions of the Organisation for Economic Co-operation and Development (OECD) Better Life Index except for work–life balance, because 14 per cent of employees work very long hours, much higher than the OECD average of nine per cent. When all topics are weighted equally, Australia ranks as one of the top three countries in the world for overall quality of life.
- Australia is ranked ninth on the United Nations World Happiness Index.
- Melbourne has been ranked first on the 2012 The Economist Intelligence Unit Global Cities Liveability Index for the second year in a row. Sydney was ranked sixth, Perth eighth and Adelaide ninth.
- The 2011 Mercer Quality of Living Index shows a slight but continued decline in ranking for Sydney and Brisbane since 2009, from 10th to 11th for Sydney and from 34th to 37th for Brisbane. Meanwhile Melbourne, Perth and Adelaide maintained their relative positions of 18th, 21st and 30th respectively. For the first time Canberra has been included in the Mercer Quality of Living survey and was ranked above Adelaide and Brisbane, at 26th position in 2011.
- A greater proportion of residents in Australian cities ranked their city as highly liveable in 2011 in the My City survey than was the case in 2010. Adelaide has retained its place as the most highly ranked city by its residents for overall liveability.

- There has been an increase in the proportion of families with children living in higher-density residential dwellings. In Sydney in 2011, 43 per cent of people living in flats, units or apartments were part of families with children. A quarter of those households were one-parent families.
- The proportion of the population that is Aboriginal or Torres Strait Islander is largest in Darwin (9.2 per cent) and smallest in Melbourne (0.5 per cent). However, Sydney's Indigenous population (54,747 people) is the largest in the country. Although proportionally the smallest, Melbourne's Indigenous population (18,206) is almost double that of Darwin (11,100).
- One indicator of mental health is rates of mental health care plans prepared by general practitioners. Data for 2009–10 show that small metropolitan areas have higher rates than non-metropolitan areas. This possibly suggests that there may be a higher prevalence of mental illness in metropolitan areas than elsewhere but it could also reflect the better ratio of general practitioners to population in cities than country areas. In either case, Melbourne has the highest rate among the major metropolitan areas. The rates also suggest that, in the case of New South Wales and Queensland, non-capital cities have higher rates than their state capital counterparts.
- While Australian cities may be expensive for international visitors, the cost of living for Australian residents of Australia's capital cities has been relatively stable for over two decades. Sydney is the most expensive city with the highest average costs for electricity, mortgage interest, transport and recreational activities.
- Early life is an important social determinant of health. Results from the 2009 Australian Early Development Index (AEDI) shows that a smaller proportion of children are 'developmentally vulnerable' in metropolitan areas than in country Australia, except in Queensland where rates of developmental vulnerability were higher in metropolitan areas than for metropolitan and country Australia.
- Of the capital cities, Hobart has the highest proportion of people who walk to work whilst Perth has the lowest. Darwin has the highest proportion of people who cycle to work whilst Sydney has the lowest.

## Measuring liveability

There has been growing public interest in understanding the relationships between the economic, environmental and social aspects of life. Nationally and internationally, governments have responded by trying to measure whether there are signs of progress or regression between these factors. In recent years there have been over 70 so-called 'indicator projects' internationally and around 50 projects in Australia that aim to measure societal and community progress and wellbeing. These range in scope from a focus on local communities to state-wide, national and international initiatives.

## Quality of life

In 2010, the Organisation for Economic Co-operation and Development (OECD), in partnership with a range of other international institutions, established the Global Project on Measuring the Progress of Societies (OECD 2011). It recommended a rethink of measurement systems and launched an international discussion on what are important economic, environmental and social goals and whether these are adequately reflected in national and international metrics. This work led to the development of the Better Life Index and other projects like the United Nations commissioned research on happiness.



## Measures of Australia's Progress 2.0

The Australian Bureau of Statistics (ABS) has produced an annual Measures of Australia's Progress report since 2002 (ABS 2012a). It is based on a core set of headline indicators and a larger subset of supplementary indicators, though very few of the indicators are specific to cities. The report presents progress across measures of economic performance, social wellbeing and the environment but the question remains as to whether these really represent what most Australians care about. For this reason, and to take account of international work in this area such as the Better Life Index, the ABS has conducted a nation-wide consultation on what matters to most Australians. The report, *Aspirations for our nation: a conversation with Australians about progress*, (ABS 2012a) released in November 2012, provides an account of the consultation. The aspirations that emerged range across four domains of society, economy, environment and governance. These consultation results and expert statistical advice will be used to develop a revised set of indicators for the next edition of Measures of Australia's Progress to be released in 2013. For more information see [www.abs.gov.au](http://www.abs.gov.au).

## OECD Better Life Index

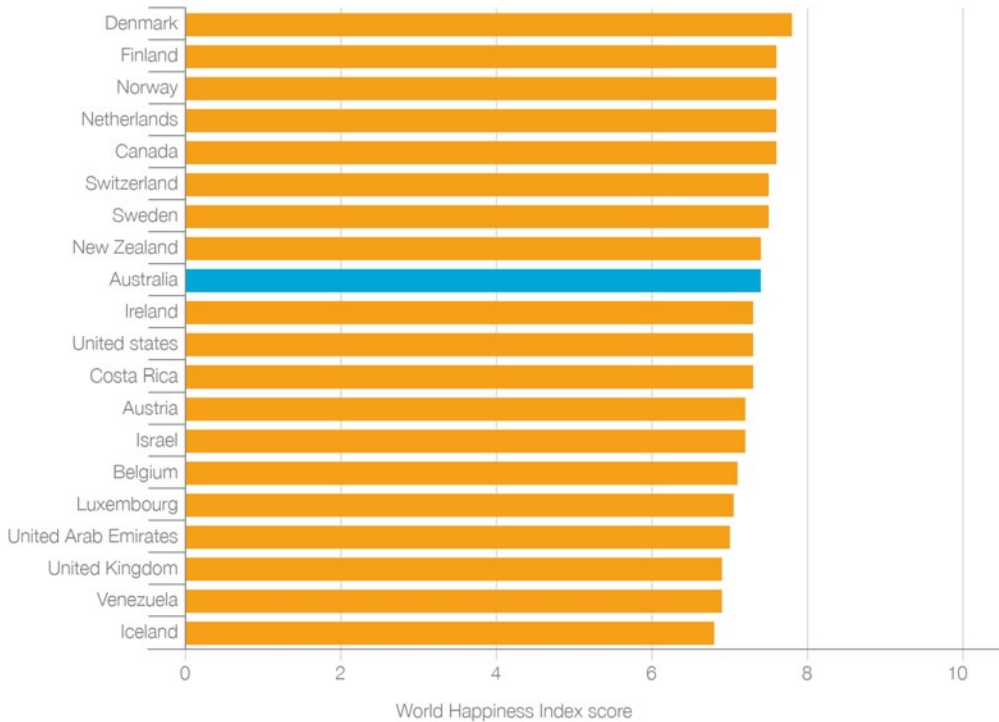
*State of Australian Cities 2011* referred to the *OECD Better Life Index*, which showed Australia as one of the top ranked countries in the world when it came to wellbeing. The OECD has continued to improve the way it reports on wellbeing. The OECD's Better Life Index now takes into account differences in rankings within countries, including comparisons between genders, and between the top 20 per cent and the bottom 20 per cent of society. The indicators that comprise the Better Life Index are drawn from issues of housing, education, income, employment, social supports, environment, civic engagement, health, safety, life satisfaction and work-life balance. Australia ranks in the top five countries across almost all of these topics except for work-life balance because 14 per cent of Australians work very long hours, much higher than the OECD average of nine per cent.

## World Happiness Report

In 2012 the *World Happiness Report* (Helliwell, Layard and Sachs 2012) was commissioned for the April 2nd United Nations Conference on Happiness (mandated by the United Nations General Assembly). The report has been produced in response to a recent world-wide call to look at happiness and absence of misery as criteria for government policy rather than just economic measures. The report reviews the level of happiness in countries around the world.

The report finds that the countries with the highest rankings were northern European and Scandinavian countries and those ranked least are in sub-Saharan Africa. The analysis of country scores found that happier countries tend to be richer countries. More important for happiness than income though are social factors like the strength of social support, the absence of corruption and the degree of personal freedom. Australia is ranked ninth on the World Happiness Index (Figure 5-1).

Figure 5-1 World Happiness Index, top 20 countries 2012



Source: Helliwell, Layard and Sachs 2012

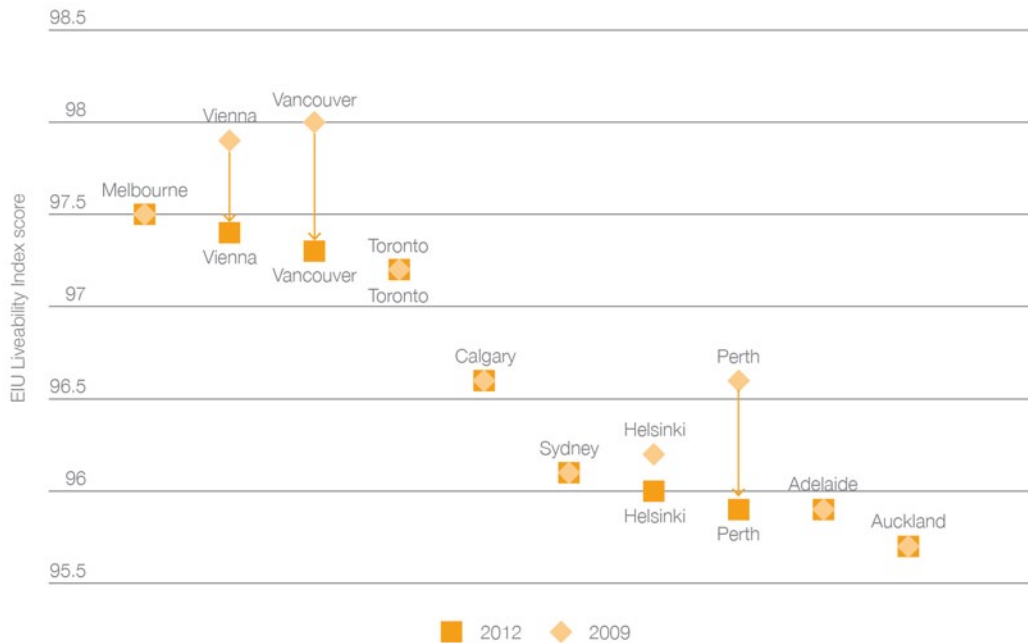
## Liveability and productivity

There is an acknowledged link between the characteristics of cities that enhance the health, wellbeing and life satisfaction of their communities and productivity outcomes. Cities that support healthy living, social inclusion and civic engagement and offer good quality housing, education, employment, accessibility and amenity are more likely to develop, attract and retain talented and enterprising people, business and innovation. Liveability has been acknowledged as important for international competitiveness, particularly in the context of the growing financial and business sectors that are highly concentrated in city centres (see Chapter 3 Productivity).

## The Economist Intelligence Unit (EIU) Liveability Index

A measure of liveability that has been developed to specifically identify cities that would be attractive to highly-skilled people is the EIU's international liveability ranking (EIU 2012a). *State of Australian Cities 2011* noted that Melbourne ranked first among 140 cities in 2011 in the EIU liveability ranking and in 2012 Melbourne has retained its top rank. Four Australian capital cities are ranked in the top 10. However, as can be seen in Figure 5-2, Australian cities have not increased their actual scores; rather, the scores of other top ranked cities have declined. In 2012 Melbourne, Sydney and Adelaide had the same score as they did in 2009, but both Melbourne and Sydney improved their ranking while Adelaide remained in the same position. In contrast, Perth's score and rank both declined between 2009 and 2012.

**Figure 5-2** Economist Intelligence Unit Global Cities Liveability Index scores for top 10 ranked cities 2009 and 2012



Note: Adelaide and Auckland were ranked 11th and 12th in 2009 and 9th and 10th in 2012 with the same score.  
Source: EIU 2009 and 2012a Global Cities Liveability Index rank and scores

The purpose of the EIU liveability ranking is to quantify a range of factors that might affect an individual's lifestyle in any given location and allow for direct comparison between locations. Every city is assigned a rating of relative comfort for over 30 qualitative and quantitative factors across five broad categories: stability, healthcare, culture and environment, education and infrastructure. Each factor in each city is rated as acceptable, tolerable, uncomfortable, undesirable or intolerable. For qualitative indicators, a rating is awarded based on the judgment of in-house analysts and in-city contributors. For quantitative indicators, a rating is calculated based on the relative performance of a number of external data sets.

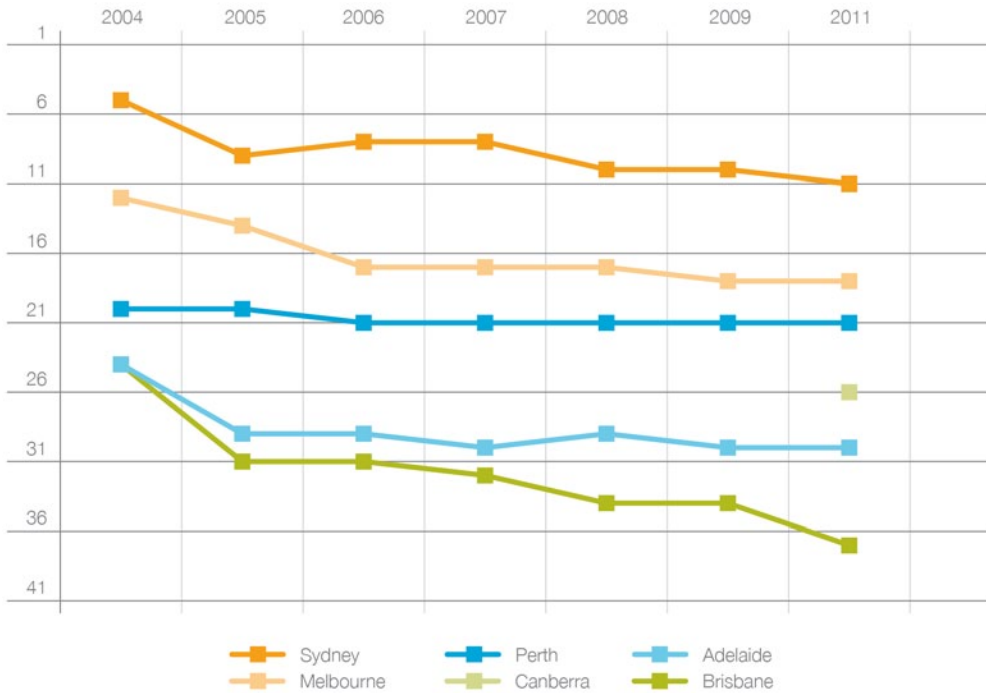
### Mercer Quality of Living Index

Another commercially developed index of liveability noted in *State of Australian Cities 2010* is the Mercer Quality of Living Index. Like the EIU Liveability ranking, the Mercer Quality of Life Index is targeted at international investment and expatriate professionals intending to move to cities for work. It is based upon externally sourced data and provides an indication of how 'attractive' cities may be to investors and international talent, revealing a tangible connection between liveability and productivity.

*State of Australian Cities 2010* noted that Australian cities had declined relative to other cities in the international quality of living rankings by Mercer Consulting. Updating these results, the 2011 Mercer Quality of Living Index shows a slight but continued decline in ranking for Sydney from 10th to 11th between 2009 and 2011, Brisbane's ranking has declined from 34th to 37th and Melbourne, Perth and Adelaide maintained their relative positions of 18th, 21st and 30th respectively, as shown in Figure 5-3. For the first time Canberra has

been included in the 2011 Mercer Quality of Living Index and debuts above Adelaide and Brisbane, at 26th position.

**Figure 5-3** Mercer Quality of Living Index change in rankings for selected Australian capital cities 2004–11



Source: Mercer Human Resource Consulting 2011

## Liveability and sustainability

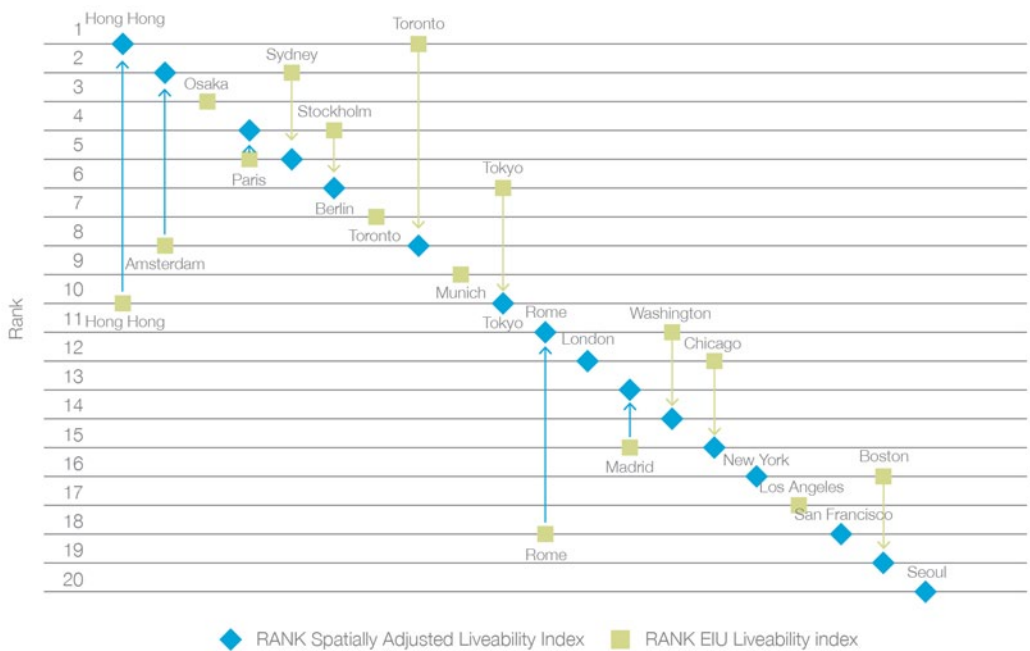
A limitation of measuring liveability using the EIU liveability index and the Mercer Quality of Living Index is that physical features of cities and their locations such as climate, terrain, population density and natural environments are not taken into consideration. These features not only contribute to overall liveability but have implications for sustainability. This section considers the connections between liveability and sustainability and recent attempts to analyse these connections. The *EIU Spatially Adjusted Liveability Index* (EIU 2012b) includes some physical features of cities that have an impact on sustainability, like density and open space, while Newton's (2012) liveability and sustainability comparisons bring together ecological footprints with liveability ratings. Each type of analysis has advantages and disadvantages, but both underscore the need to consider the liveability of cities in relation to the impact on the environment.

# EIU Spatially Adjusted Liveability Index

In an attempt to expand the scope of the EIU Liveability Index, the EIU held a competition to develop new ways to measure and visualise the liveability of cities (EIU 2012b). The winning entry by Filippo Lovato expresses liveability through a broader range of indicators and with a change to methodology. The new ranking is expressed as both a score and a map indicator to take account of variations in the physical characteristics of the natural and built environment between cities.

The EIU's Spatially Adjusted Liveability Index includes a new set of variables relating to the natural environment – namely, coverage of green space, like parklands – to score how 'green' a city is as well as data on pollution levels, world heritage and natural landscapes. The index also uses Google maps to assess the built environment and score features such as the spatial extent and density of urban development to score 'sprawl'. Other variables include the isolation of the city relative to other cities and connectivity by air travel to other international cities. Using this new methodology, a quite different ranking of cities emerged which has Hong Kong as the top ranked city (EIU 2012b). Sydney retains a top 10 ranking in the Spatially Adjusted Liveability Index. Other top ranked cities on the EIU Liveability Index, such as Melbourne, Vienna and Vancouver, were not included in the sample of 70 cities for the Spatially Adjusted Liveability Index. However, the results illustrated in Figure 5-4 show a relative decline in ranking for spread out cities like Sydney and Toronto when spatial characteristics are considered. On the other hand, higher density cities like Hong Kong, Amsterdam and Rome improved their ranking on the Spatially Adjusted Liveability Index, compared to the conventional EIU Liveability Index.

Figure 5-4 EIU Spatially Adjusted Liveability Index 2012



Source: EIU 2012b

The Spatially Adjusted Liveability Index highlights how different results for city rankings can be achieved by using different variables. Whether characteristics like international connectivity and urban form are as important to liveability as other variables is open to debate.

### Ecological footprint and liveability

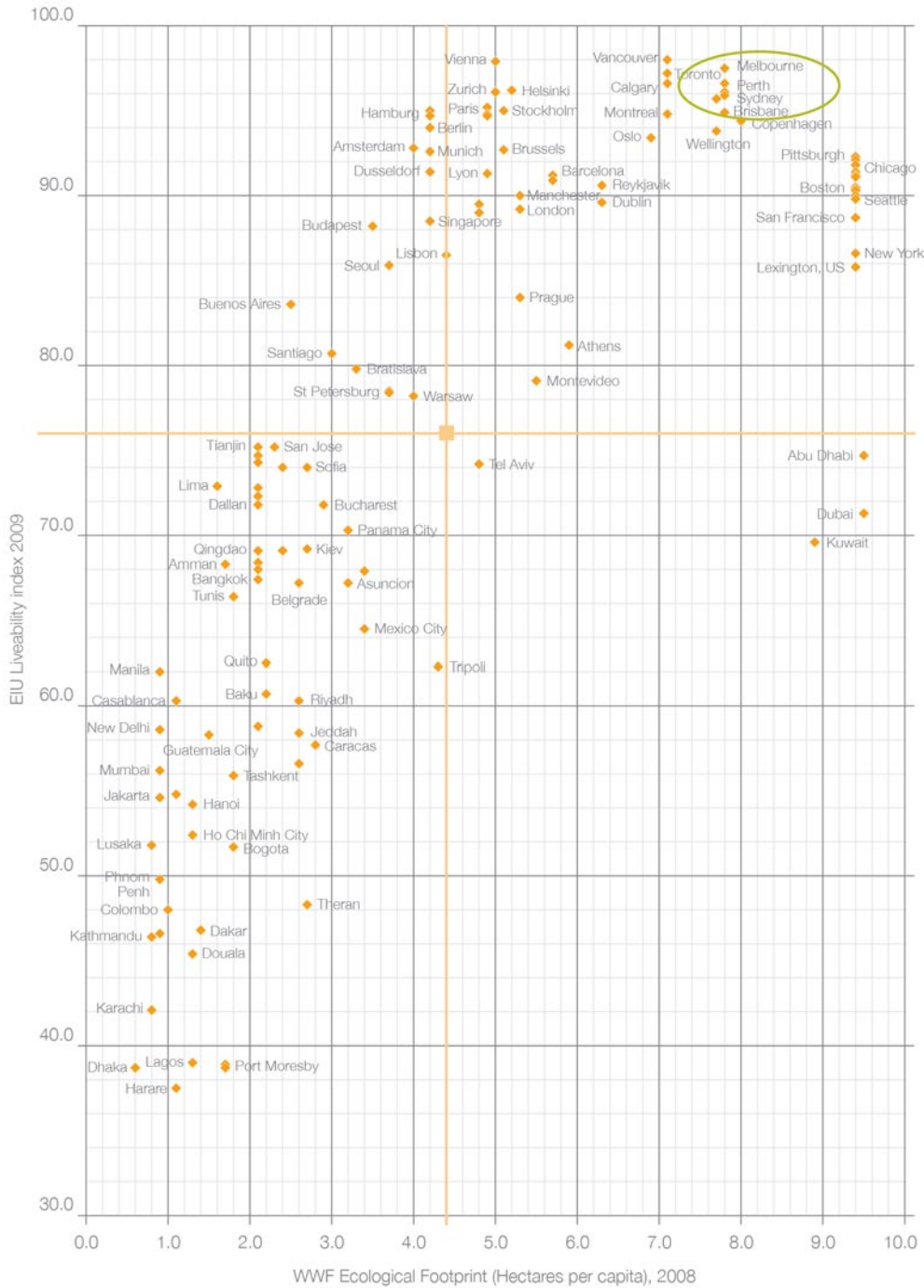
A methodology to better understand the relationship between liveability and sustainability has been suggested by Peter Newton (2012). He combines data from the EIU liveability rankings for cities with the data for national ecological footprints as assessed by the World Wildlife Fund (see Figure 5-5). An 'ecological footprint' is an accounting concept for sustainability that estimates the amount of productive land and water that a population requires to support its current level of consumption and waste production. The ecological footprint metrics that Newton uses have been calculated for 160 countries (WWF 2008) though not individual cities because the indicators and data are not yet standardised for that smaller scale.

*Gold Coast.*

Image courtesy of Sara Stace



Figure 5-5      Newton’s liveability–sustainability nexus for cities in 2010



Source: Newton 2012



It is apparent that there are clusters of cities from the same region that share similar liveability and sustainability ratings. For example, the Australian capital cities of Melbourne, Sydney, Brisbane, Perth and Adelaide rank highly on liveability but also score high on resource consumption. American cities are clustered together with more moderate ratings for liveability but still high levels of resource consumption. In contrast, there is a group of cities that rates relatively highly for liveability but has a lower than average ecological footprint. The group comprises Buenos Aires, Santiago, Dusseldorf, Munich, Budapest, Amsterdam, Warsaw, Moscow, St Petersburg, Singapore, Bratislava and Seoul. It would seem that liveability does not need to come at the cost of sustainability and Newton (2011) indicates there are pathways available for cities to wind back urban consumption, including technological innovation, better urban design, household behaviour change and new forms of urban governance.

### Liveability in Australian cities

In Australia, the idea of seeking resident views of liveability has been adopted by the Property Council of Australia City Liveability Index. Because liveability is highly subjective, it is particularly useful to consider the views of residents and their perceptions of how well their city supports individual and community wellbeing. Surveys of populations are widely used to provide insights into perceptions about liveability. Although surveys such as the Australian City Liveability survey described in the next section, have drawbacks such as under-representing some groups, they can be helpful in understanding what can contribute to or detract from the liveability of cities.

## Property Council of Australia (PCA) Australian City Liveability Index

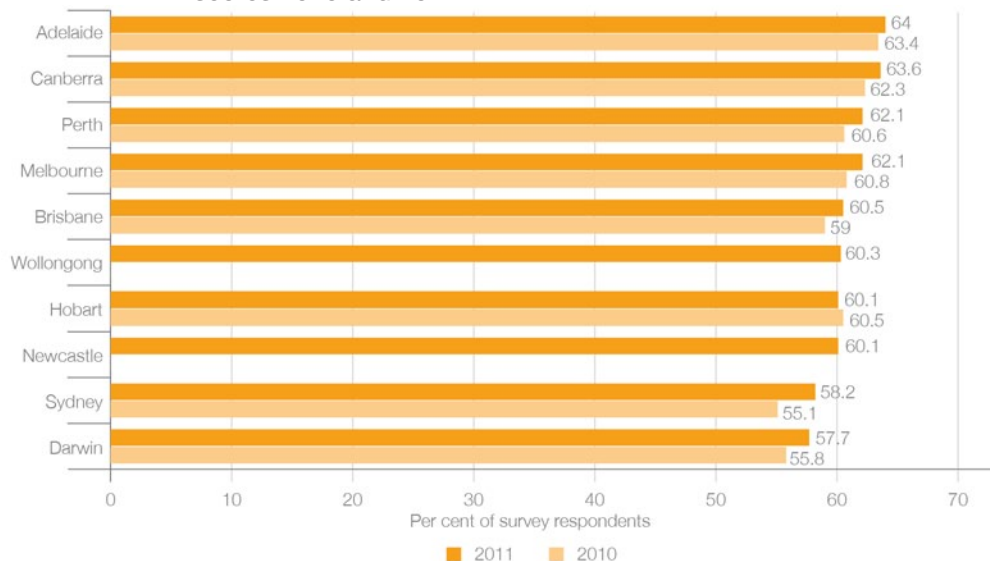
The Australian City Liveability Index was developed by AUSPOLL (2012) for the Property Council of Australia to better understand attitudes about cities. As reported in *State of Australian Cities 2011*, the index is based on a survey of Australian city residents which asks them to rank their city against 17 attributes that relate to safety, accessibility, affordability, health, diversity of social, cultural and recreational opportunities, congeniality, environmental sustainability and quality of urban design and amenity.

In this case 'liveability' is defined as the degree to which a city meets the needs and preferences of the residents who live there. The 'liveability index' is accordingly a function of both:

- the importance that residents place on particular attributes of a city
- the performance of their city on each of these attributes.

In other words, the attributes of a city that are more important to its residents contribute relatively more to the overall 'liveability score'. Conversely, the attributes that its residents feel are less important contribute a relatively small amount to overall liveability. The PCA Liveability Index has been updated for 2011 and now includes two regional cities – Newcastle and Wollongong. The latest survey, conducted in December 2011, was completed by 5,231 Australians (Figure 5-6).

**Figure 5-6** Property Council of Australia (PCA) Australian City Liveability Index scores 2010 and 2011

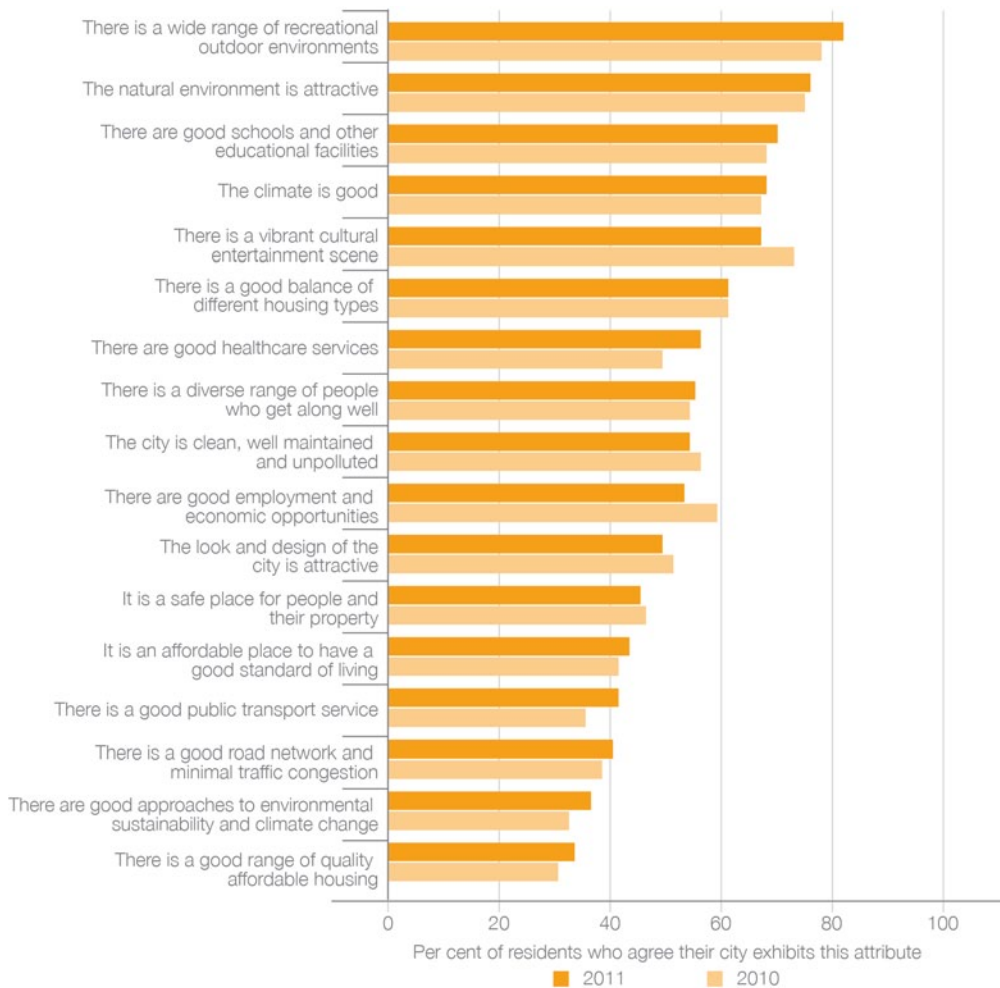


Source: AUSPOLL 2012, Liveability Index compiled from My City survey data

Overall the majority of residents in each of Australia's capital cities rate their city as liveable. There was an increased proportion of residents who ranked their city as highly liveable in all cities and, as was the case in 2010, Adelaide was the most highly ranked city.

Across the attributes that make up the PCA Australian City Liveability Index, the range of outdoor recreational facilities and the attractiveness of the natural environment were the attributes that scored most highly among the 10 cities surveyed. At the other end of the scale, the approaches to environmental sustainability and the range of affordable housing scored worst across the cities, as shown in Figure 5-7.

**Figure 5-7** City average performance on each attribute PCA Australian City Liveability Index 2010 and 2011

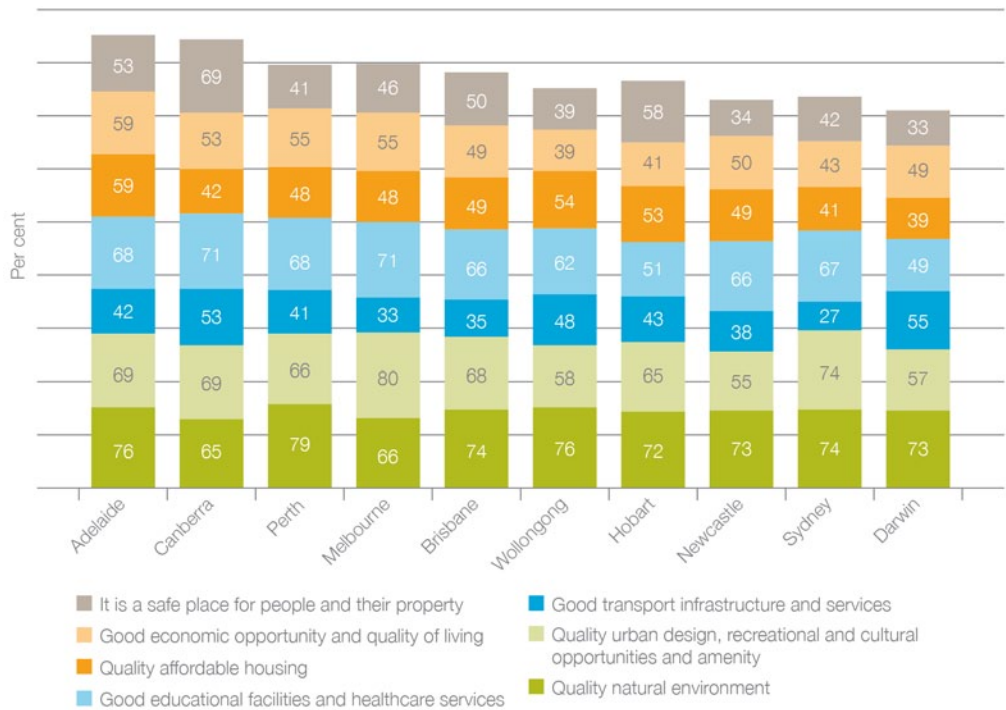


Source: AUSPOLL 2012

While there was greater consensus between residents in 2011 than 2010 on attributes such as city transport and health care services, there was a notable decline in the proportion of residents who agreed that their city had good employment and economic opportunities or a vibrant cultural entertainment scene.

There were some notable variations between cities in relation to the different attributes that residents agreed were true for their city. Figure 5-8 shows a summary of the responses to the attributes for each city in the My City survey. It suggests that while Adelaide is the most highly rated city overall, the other cities display their particular strengths in one or more attributes. For example Canberra, was most highly rated for safety, education, health facilities and services while Perth rated the quality of its natural environment (climate and attractive natural features) higher than any other city. Melbourne equalled Canberra for the highest proportion of people who agreed that it had good education and health facilities and services and was most highly ranked for its quality of urban design and amenity.

**Figure 5-8** PCA Australian City Liveability Index of survey respondents who agreed or strongly agreed that the selected liveability attribute was true for their city, 2011



Note: Percentage shown for safety attribute is for a single attribute only. All other percentages are averaged across responses for more than one complementary attribute. Data courtesy of the Property Council of Australia.

Source: AUSPOLL 2012

A majority of people in Adelaide, Wollongong and Hobart agreed that their city had quality affordable housing while Darwin had the highest proportion of people who agreed that their city had good transport infrastructure and services. Sydney on the other hand was rated least well in terms of transport services.

## Liveable Cities Program

In 2011 the Australian Government committed funding to support state, territory and local governments in meeting the challenges of improving the quality of life in our capitals and major regional cities through the Liveable Cities Program. Grants were allocated to projects which aimed to:

- encourage residential developments that were affordable, adaptable and accessible, with good access to services and public transport
- create or enhance mixed-use precincts that optimise public transport use, such as the creation of transit malls and the redevelopment of public spaces
- develop strategic plans for major regional cities with populations greater than 100,000 in line with the COAG criteria for capital city strategic planning systems, including the identification and preservation of critical infrastructure corridors, sites and buffers.

There were successful projects in most of Australia's major cities through the Liveable Cities Program. The projects included new urban developments, revitalising existing centres, improving transport options, reducing car dependency and traffic congestion, expanding affordable housing and tackling the challenges of climate change. Although each project differed, all aimed to make cities more liveable. These projects should provide useful examples that can be applied elsewhere. For more information see [www.nationbuildingprogram.gov.au/funding/liveablecities/index.aspx](http://www.nationbuildingprogram.gov.au/funding/liveablecities/index.aspx)

*Granite Hill looking south, Perth, Western Australia.*

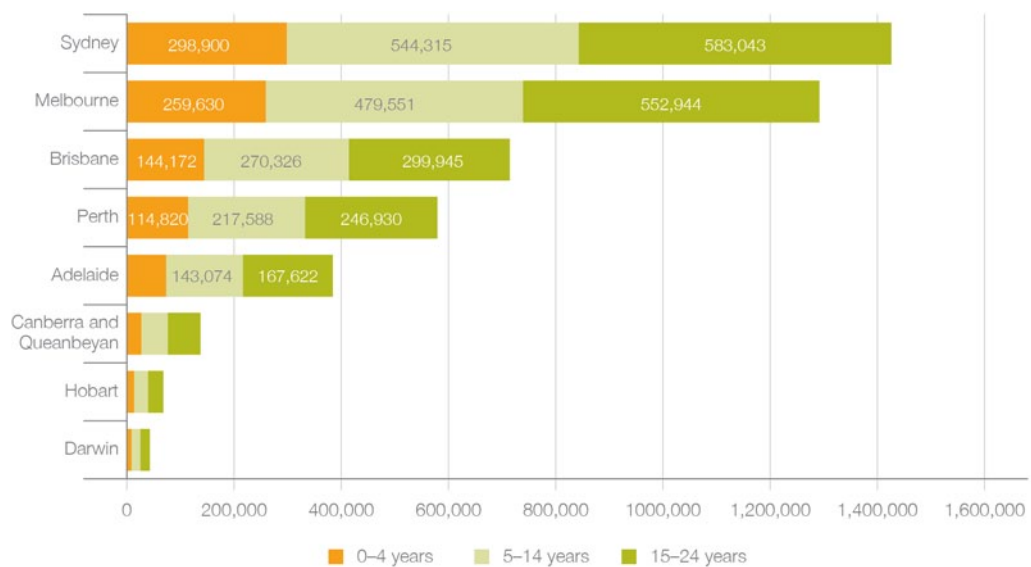
Image courtesy of Western Australian Department of Planning



# Cities for people of all ages and abilities

People’s needs change throughout their lives and therefore an important marker of liveability of cities is how well they support the wellbeing of people at different life stages. Discussion about an ageing population usually focuses on productivity, but an increasing proportion and number of older people will require different housing, better access to health and transport services, more accessible public transport and pedestrian areas that are easier to manage by people with poor mobility. At the same time, population growth and changing patterns of urban settlement (as noted in Chapter 2 Population and Settlement) mean that some localities within cities also have growing numbers of young children (Figure 5-9).

Figure 5-9      Number of children and young people by age group in capital cities, 2011



Source: ABS 2012e

In the past, outward urban expansion has been largely associated with residential development for families in single detached houses. Inner city residential apartment dwellings have been typically targeted at single or couple households. However, over the past two decades housing and lifestyle preferences have changed considerably, as discussed in the recent reports by the Grattan Institute (Kelly et al. 2012b, 2011a, 2011b).

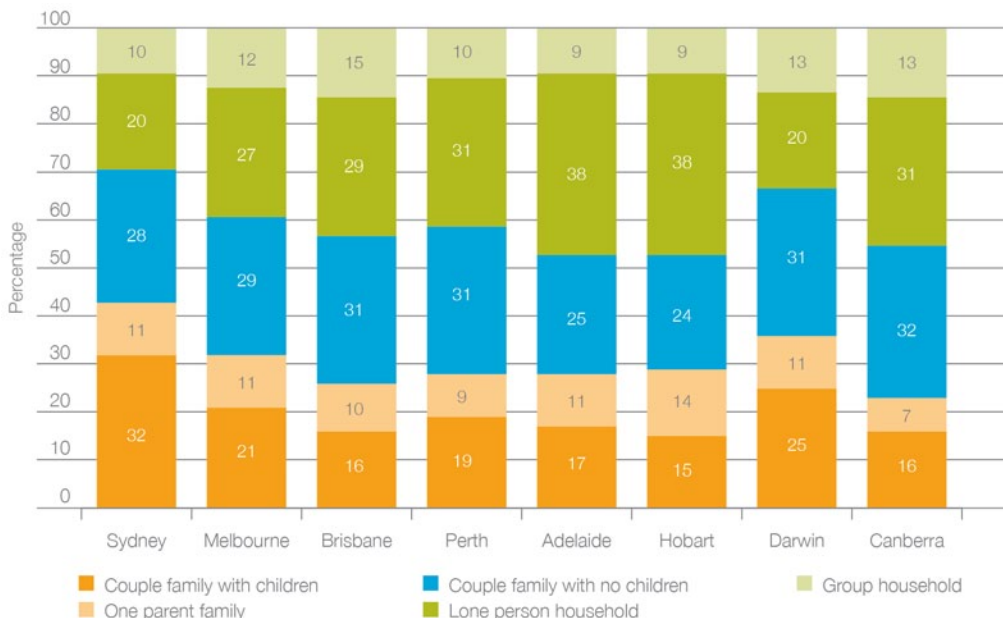
Alongside changes in residential development from population growth and changing settlement patterns, we are seeing changing family configurations and living arrangements (Liu and Easthope 2012). The demographic profiles of inner, middle and outer suburbs in Australian cities vary as people who remain within their local areas grow older. As argued recently in the Grattan Institute report *Tomorrow’s suburbs* (Kelly et al. 2012b), our cities and their suburbs must be able to adapt and adjust to demographic and social changes. This requires more thoughtful planning and urban design.

## Child-friendly cities

An increase in inner city populations in the capital cities over the past decade or two has resulted in a notable growth in the numbers of young children in the inner city areas of some but not all cities.

Inner cities now tend to have higher proportions of multi-unit residential dwellings and, with the growth in numbers of family households with children in inner city areas, there has been an increase in the proportion of children living in higher-density residential dwellings. This is especially evident in Sydney. In 2011, 43 per cent of people living in flats, units and apartments were part of families with children, and a quarter of these households were in one-parent families (Figure 5-10).

**Figure 5-10** Proportion of people living in flats, units or apartments by household composition, capital cities, 2011



Note: Persons enumerated on Census night in occupied private dwellings in one-family households only.

Source: ABS 2012e

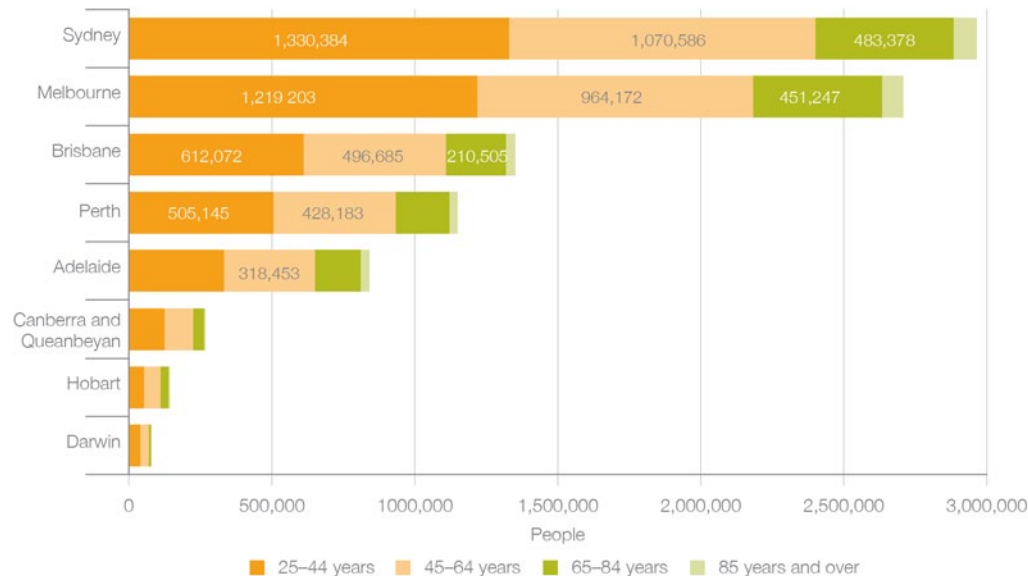
The growing numbers of children living in apartments in inner city areas has renewed attention on the needs of children and young people in the planning and design of the built environment (Fincher and Iveson 2008, Freeman and Tranter 2011, NSW Commission for Children and Young People 2012). A 1996 United Nations initiative known as 'child-friendly cities' was established in 1996 to guide cities and other systems of local governance in the inclusion of children's rights (UNICEF 2012). 'Child friendly cities' principles have been adopted by a number of local councils across Australia. In Wollongong, for example, Healthy Cities Illawarra is coordinating a range of activities to encourage young people to help plan their locality. Child Friendly by Design (CFbD) works with agencies, organisations and local governments across Australia to make child- and family-friendly places and spaces. For example, the CFbD project has involved children, young people and families directly in the development of the Wollongong 2022 Community Plan to make sure facilities and services address their needs (Healthy Cities Illawarra 2012).



## Aged-friendly cities

While many families move house as family composition changes, others choose to remain living in the same home or locality for much of their lives. Many older people prefer to ‘age in place’ rather than opt to move away from family, friends and/or familiar surrounds. Again, actual population numbers (as shown for working age and older groups in Figure 5-11), rather than proportions, are more relevant for city planners, local authorities and service providers.

Figure 5-11 Number of people aged 25 and over in capital cities, 2011



Source: ABS 2012e

As people age they find things such as self-care and personal mobility more difficult. The availability of suitably designed housing, neighbourhoods, commercial centres, public space and transport has an influence on the health and wellbeing of people of all ages but particularly affects the level of independence, mobility and social interaction enjoyed by older people.

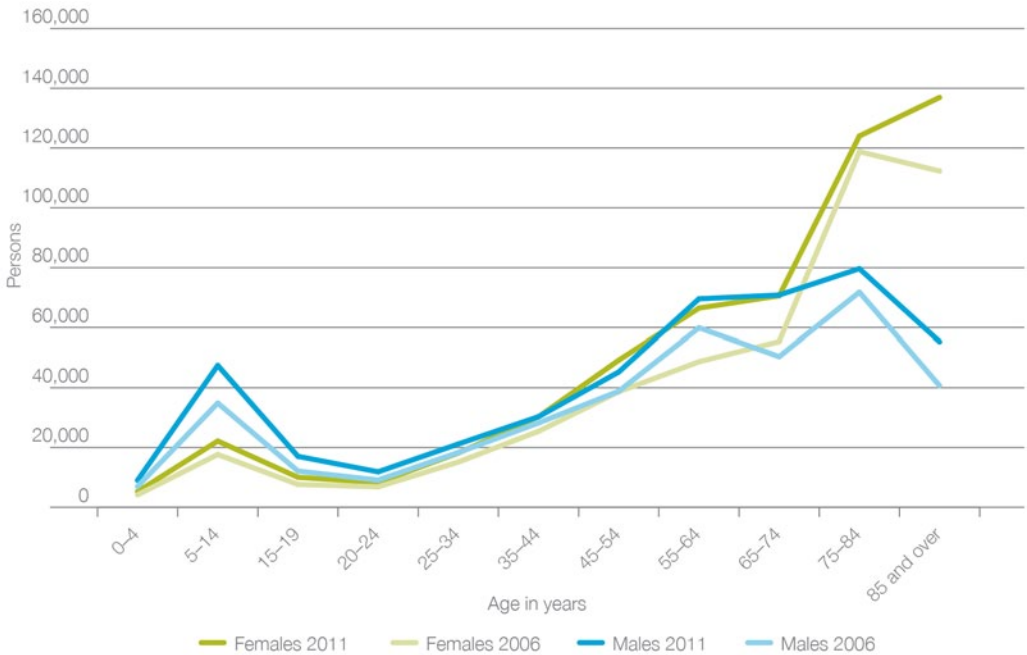
## People with disability

According to the *United Nations Convention on the Rights of Persons with Disabilities*, ‘disability’ arises from the combination of impairments and barriers that ‘hinder ... full and effective participation in society on an equal basis with others’. The impairments can include ‘long-term physical, mental, intellectual or sensory impairments’. Barriers can be attitudinal or environmental (AHIW 2012).

The 2009 ABS Survey of Disability, Ageing and Carers (ABS 2012b) found that the proportion of the population that reported a disability in Australia in 2009 was 18.5 per cent or 4,026,020 people. This represents a slight decrease from 20.4 per cent in 2003, attributed to a smaller proportion of people with disabilities such as asthma and heart disease (ABS 2012b).

The ABS *Census of Population and Housing* (ABS 2012e and 2007) measures the number of people with a disability by asking how much help they need with a core activity, as shown in Figure 5-12. The 'Core Activity Need for Assistance' indicator measures the number of people with a profound or severe disability defined as needing help or assistance in one or more of the three core activity areas of self-care: mobility and communication because of a disability, long-term health condition (lasting six months or more) and old age.

**Figure 5-12** Number of persons in need of assistance for a core activity, Australia, 2006 and 2011



Source: ABS 2007, 2012e

There are four categories that relate to the degree of severity of disability: profound, severe, moderate and mild. With the ageing of the population the number of people with severe or profound disability is projected to more than double over the next 40 years from 1.4 million to 2.9 million, representing a significant increase in demand on services for these people and their carers. Improving the wellbeing of people living with a disability is the focus of the *National Disability Strategy 2010–2020*.

## Council of Australian Governments (COAG) National Disability Strategy 2010–2020

In 2008 the Council of Australian Governments (COAG) signed a National Disability Agreement which ratified the United Nations Convention on the Rights of Persons with Disabilities. Then in 2011 COAG committed to a *National Disability Strategy 2010–2020* to help ensure that the rights of people with disability are protected and promoted and that government policy and programs affecting people with disability, their families and carers support their wellbeing and remove barriers to their contribution to, and participation in, society (COAG 2011).

Under the National Disability Agreement and the Strategy, the Australian and state, territory and local governments committed to an overarching objective that people with disability and their carers have an enhanced quality of life in ‘an inclusive Australian society that enables people with disability to fulfil their potential as equal citizens’ (COAG 2011).

Progress towards this objective has recently been assessed and reported by the COAG Reform Council (2012) against the following three outcomes set out in the National Disability Agreement:

- People with disability achieve economic participation and social inclusion
- People with disability enjoy choice, wellbeing and the opportunity to live as independently as possible
- Families and carers are well supported.

The report, entitled *Disability 2010–11: Comparing performance across Australia* (COAG Reform Council 2012) found that, as one measure of participation, the rates of labour force participation for people with disability had significantly increased in Western Australia, from 54.5 per cent to 62.4 per cent between 2003 and 2009. Although still much lower than the participation rate for people without disability (82.8 per cent), the improvement in Western Australia is particularly notable because nationally the labour participation rate for people with disability (54.3 per cent) has not changed significantly since 2003 (COAG Reform Council 2012).

There are many aspects of cities and urban living that can restrict the quality of life of people with disability. For example, even people with a mild disability, who need no help and have no difficulty with any core activity tasks like self-care, can still have difficulties participating fully in their communities because they:

- use aids and equipment
- cannot easily walk 200 metres
- cannot walk up and down stairs without a handrail
- cannot easily bend to pick up an object from the floor
- cannot use public transport
- can use public transport but need help or supervision
- may need no help or supervision but have difficulty using public transport (ABS 2012b).

## Suitable housing

Older people and people with disability may be helped with everyday activities and mobility at home and in their communities by improved design of housing, neighbourhoods and transport. Increased application of universal housing design is being promoted nationally by Livable Housing Australia.

*Universal Design Guidelines 2008.*

Image courtesy of Landcom NSW





*The Livable Housing Design (LHD) Guidelines* reflect a consensus guideline for liveable design that has achieved industry, community and government endorsement. These practical, common-sense guidelines describe easy living design features that are inexpensive to incorporate into the home design and deliver huge social and economic dividends for future generations of Australians.

Livable Housing Australia (LHA) is the national organisation responsible for championing the adoption of liveable housing design principles in all new homes built in Australia. It also administers the formal accreditation process for dwellings that achieve the performance standards set out in the LHD Guidelines.

The guidelines provide technical advice on the features that make a home easier and safer to live in for people of all ages and abilities.

Through adopting the LHD Guidelines, dwellings are designed to:

- be easy to enter
- be easy to navigate in and around
- be capable of easy and cost-effective adaptation
- be responsive to the changing needs of home occupants.

There are three levels of performance: silver, gold and platinum and seven core elements as follows:

1. A safe and continuous path of travel from the street entrance and/or parking area to a dwelling entrance that is level
2. At least one level (step-free) entrance into the dwelling
3. Internal doors and corridors that facilitate comfortable and unimpeded movement between spaces
4. A toilet on the ground (or entry) level that provides easy access
5. A bathroom that contains a hobless (step-free) shower recess
6. Reinforced walls around the toilet, shower and bath to support the safe installation of grabrails at a later date
7. A continuous handrail on one side of any stairway where there is a rise of more than one metre.



To achieve a silver, gold or platinum liveability rating, dwellings need to be assessed by a registered LHA Assessor at both the 'design' and 'as-built' stage of the development. The silver, gold and platinum ratings represent a trusted quality mark that attests to the enhanced liveability of a dwelling. For more information on this assessment and verification pathway see [www.liveablehousingaustralia.org.au](http://www.liveablehousingaustralia.org.au)

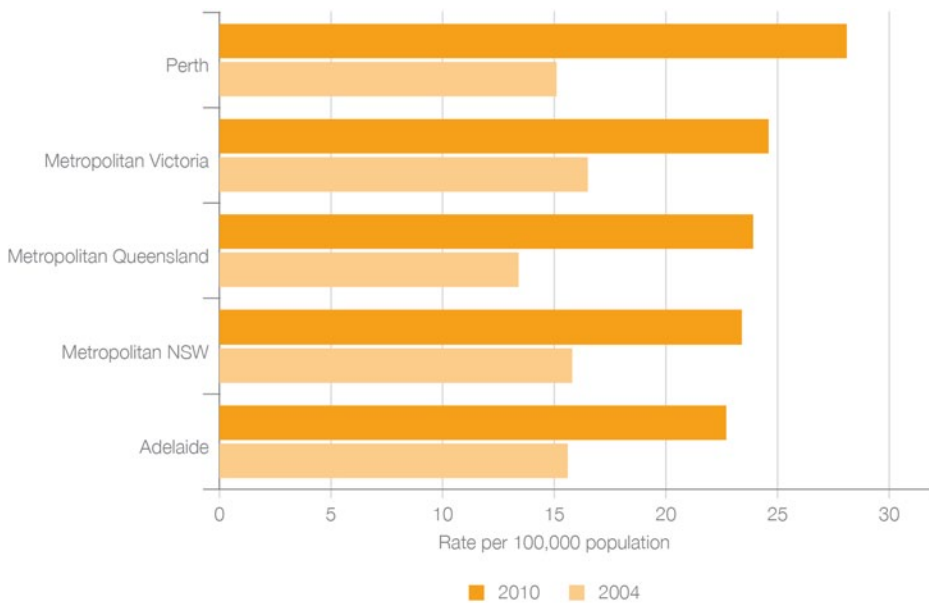
## Residential aged care and in-home community care

When health deteriorates to such a degree that a person becomes very frail or ill and can no longer be cared for adequately in their present accommodation, high-level care in a nursing home may become necessary. High-level care provides 24-hour nursing and personal care with support for the activities of daily living, including dining, showering, continence management, rehabilitation and medications.

An alternative to nursing in their own home care is Community Aged Care, which offers low dependency level care for older people who are frail and/or disabled whether they live with their spouse, family or on their own.

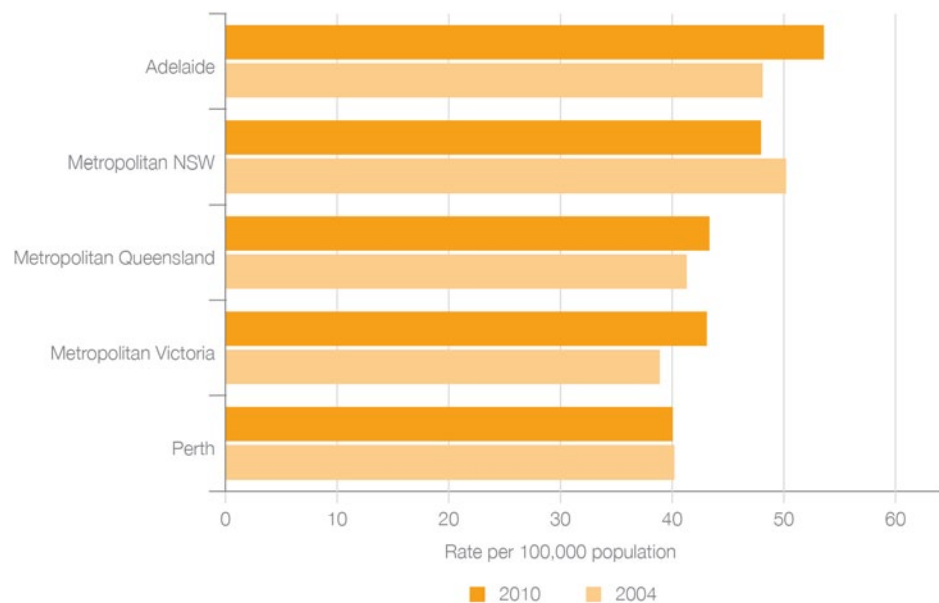
Ageing of the population is expected to increase demand for community care and high-level residential care places in all cities. Figures 5-13 and 5-14 show recent rates of provision.

**Figure 5-13** Community care places for population 70 years and over, large capital cities



Source: Data compiled by PHIDU 2012, using data from the Department of Health and Ageing, June 2004 and 2010 and ABS Estimated Resident Population, 2004 and 2010

**Figure 5-14** High-level residential care places for population aged 70 years and over in residential care



Source: Data compiled by PHIDU 2012, using data from the Department of Health and Ageing, June 2004 and 2010 and ABS Estimated Resident Population, 2004 and 2010

## Inequality

The level of wellbeing of the Australian population is high when compared to many overseas countries. However, these statistics hide substantial differences in the health and wellbeing of specific groups within our population. Although this is most evident for Aboriginal and Torres Strait Islander peoples, there are also many other disadvantaged groups in Australia.

The OECD has recently reported a growing inequality of income in almost all OECD countries over the past two decades. On average, people in the top 20 per cent earn five times as much as the bottom 20 per cent although in some countries the gap is much smaller.

In cities, income inequalities are most evident in suburbs and at the neighbourhood level, where socioeconomic disadvantaged populations are concentrated (Pawson et al. 2012). Data for the Socioeconomic Index for Areas based on the 2011 Census will be available for analysis in the 2013 edition of the *State of Australian Cities* report.

## Closing the Gap for Aboriginal and Torres Strait Islander peoples

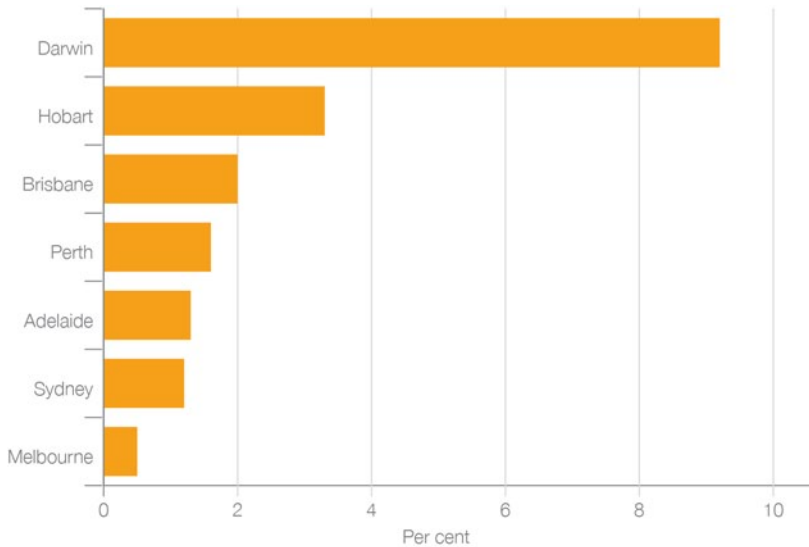
Health and wellbeing varies greatly between people of Aboriginal and Torres Strait Islander origin and the non-Indigenous population. In 2011 there were 548,370 people identified as being of Aboriginal and/or Torres Strait Islander origin counted in the Census (ABS 2012e). Of these people, 90 per cent were of Aboriginal origin, six per cent were of Torres Strait Islander origin and four per cent identified as being of both Aboriginal and Torres Strait Islander origin. These proportions have changed very little over the last 10 years.



The Northern Territory has the largest proportion of Aboriginal and Torres Strait Islanders – just under 27 per cent of the population identified and were counted as being of Aboriginal and/or Torres Strait Islander origin in the 2011 Census. In all other jurisdictions, four per cent or less of the population were of Aboriginal and/or Torres Strait Islander origin. Victoria has the lowest proportion at 0.7 per cent of the state total.

In the capital cities, the proportion of the population who were Aboriginal or Torres Strait Islander was largest in Darwin (9.2 per cent) and smallest in Melbourne (0.5 per cent), as shown in Figure 5-15.

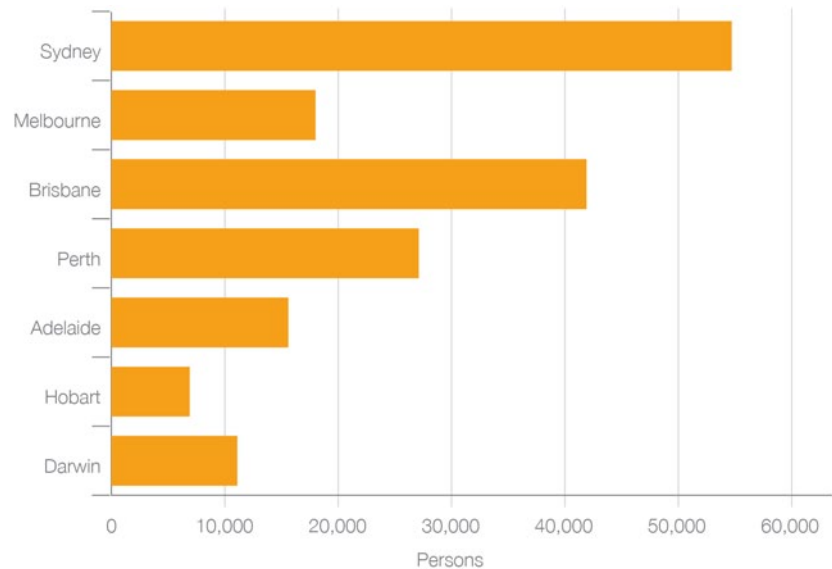
**Figure 5-15** Population of Aboriginal and Torres Strait Islander people as a proportion of total population in capital cities, 2011



Source: ABS 2012e

The proportional distribution of the Indigenous population is not replicated in population size. Figure 5-16 shows that at the 2011 Census Sydney's Indigenous population (54,747 people) was the largest among the capital cities and, although proportionally the smallest, Melbourne's Indigenous population (18,206) was almost double that of Darwin (11,100).

Figure 5-16      Number of Aboriginal and Torres Strait Islander people in capital cities, 2011



Source: ABS 2012e

## Social inclusion

In 2012 the Australian Government's Social Inclusion Unit released the second edition of its report *Social Inclusion in Australia: How Australia is faring*, tracking progress against a range of indicators.

The report assesses six indicators across economic, personal and social domains, finding that around 640,000 people, or approximately five per cent of Australia's working age population, continue to experience three or more of the selected disadvantages.

The report finds that disadvantage remains concentrated geographically, noting that those in the lowest socioeconomic areas are 20 per cent less likely to complete Year 12 or equivalent and more than twice as likely to feel unsafe walking alone in their local area than those in the least disadvantaged areas (Australian Government 2012).

The extent to which disadvantage is exacerbated by spatial factors has implications for social equity, as multiple disadvantage can have a 'compounding and persistent effect, reinforcing barriers to getting ahead and increasing the likelihood of other related problems later in life' (Australian Government 2012, p. 6). The provision of public transport, for example, 'has an important role to play in facilitating social equity, by providing individuals who are economically, physically and socially disadvantaged with basic mobility and necessary access to public services including markets, employment, health services, and education' (Krygsman et al. in Hensher and Chen 2010, p. 1).

## Healthy living

The health of urban populations is linked to the physical environments and socioeconomic factors that affect lifestyles.

In most OECD countries the biggest contributors to poor health are tobacco smoking, alcohol consumption, obesity, unhealthy diet and lack of physical activity.

## Life expectancy

The ABS collects a wide range of health information from the National Health Survey, the Survey of Disability, Ageing and Carers, the Survey of Mental Health and Wellbeing, and the Patient Experience Survey. These health surveys are not collected annually but can provide an indication of health trends.

Australia's male and female combined life expectancy figure is 81.4 years, higher than the rate in the UK, Canada, New Zealand and the USA (ABS 2012c). Over the past 10 years, life expectancy at birth has improved nationally by 2.7 years for males and just under 1.8 years for females. Based on current mortality rates, a boy born in 2009–2011 can expect to live to 79.7 years, while a girl can expect to live to 84.2 years (ABS 2012c). While city data is not readily available, there are some notable differences in life expectancy between states and territories with the Australian Capital Territory having the highest life expectancy for males (81 years) and females (84.8 years) and the Northern Territory the lowest (74.9 for males and 80.5 for females).

As noted in *State of Australian Cities 2011*, the life expectancy for Aboriginal and Torres Strait Islander people is significantly lower than that of the non-Indigenous population. In the period 2005 to 2007, life expectancy at birth was estimated to be 67.2 years for Aboriginal and Torres Strait Islander males – around 12 years less than life expectancy at birth for non-Indigenous males (78.7 years). Similarly, the estimated life expectancy at birth for Aboriginal and Torres Strait Islander females was 72.9 years – around 10 years less than life expectancy at birth for non-Indigenous females (82.6 years) (ABS Yearbook 2012).

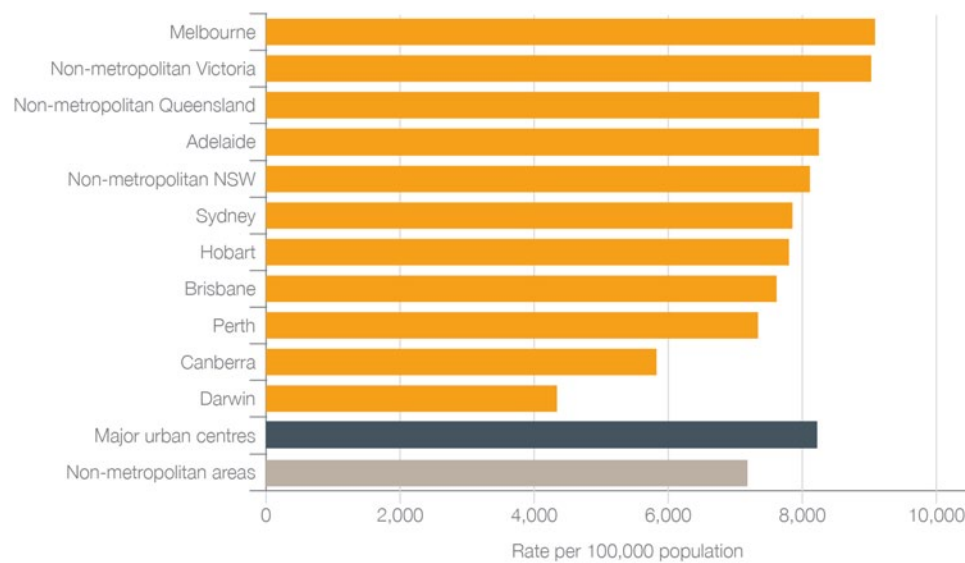
## Mental health

Depression is a common mental disorder that can be chronic or recurrent. It can substantially impair an individual's ability to take care of his or her everyday responsibilities and lead to long-term poor health. The World Health Organization (WHO) estimates that by 2020, depression will be the second leading cause of disability (WHO 2001) and by 2030 it is expected to be the largest contributor to disease burden (WHO 2008).

A range of personal, social and environmental factors including living conditions, can influence rates of depression within populations. Rates of diagnosis are one way to gauge the mental health of populations. They can also indicate the availability of medical practitioners as a starting point for examining the influences of environmental factors. For example, through the Better Access Program, local general practitioners (GPs) prepare mental health care plans for patients. The number of plans prepared is one indicator of the number of people presenting with mental health concerns. The rates of mental health care plans prepared by GPs for 2009–10 (Figure 5-17) show that metropolitan areas have higher rates than non-metropolitan areas. Melbourne has the highest rate among the major metropolitan areas.

The rates also suggest that in the case of New South Wales and Queensland, non-capital cities have higher rates than their state capital counterparts.

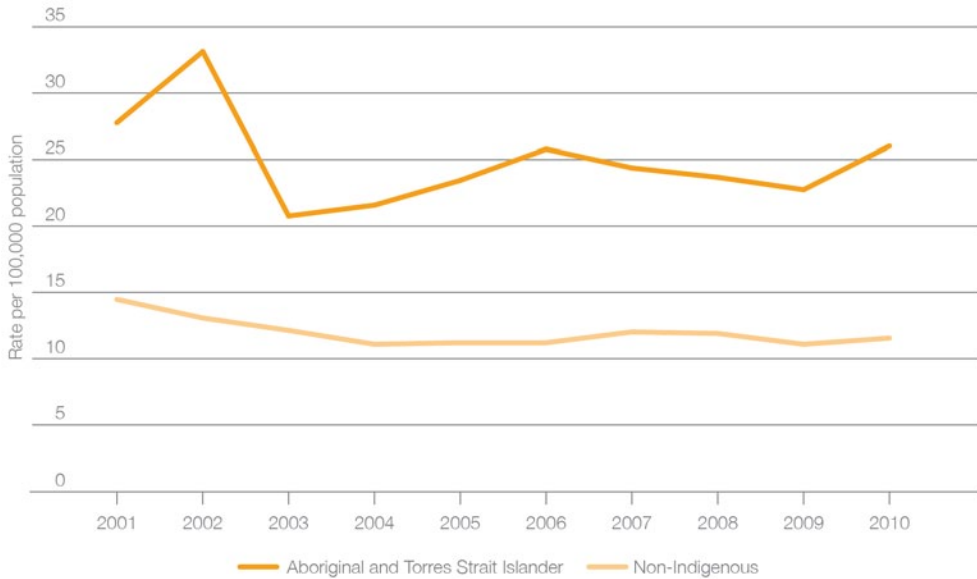
**Figure 5-17** Better Access Program: Preparation of mental health care plans by GPs, 2009–10, rate per 100,000 population



Source: PHIDU 2012

Mental health is another issue where health inequalities are evident for Australia’s Indigenous people. The rate of suicides among Aboriginal and Torres Strait Islanders is double that of the non-Indigenous population and the gap has changed little over the past 10 years (Figure 5-18).

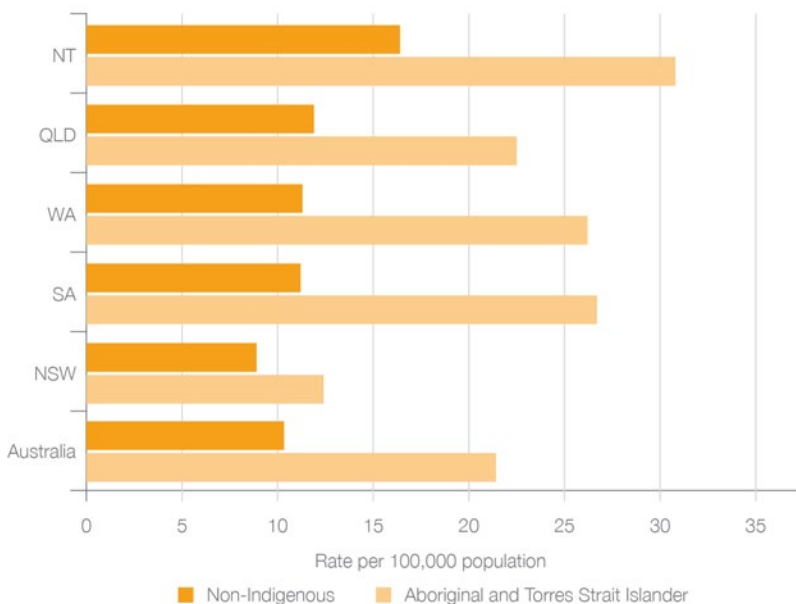
**Figure 5-18** Age standardised suicide rate per 100,000 population by Indigenous status, Australia, 2001–10



Source: ABS 2010

There is a significant difference in suicide rates between the states, with New South Wales having the lowest suicide rates over the period 2001 to 2010 and the smallest gap between suicide rates for Indigenous and non-Indigenous population (Figure 5-19).

**Figure 5-19** Age standardised suicide rate by Indigenous status for five states, 2001–10



Source: ABS 2010

## Social determinants of health

Although life expectancy rates and socioeconomic equality in Australia are relatively good by international standards, people with lower incomes experience a greater prevalence of long-term health conditions. The most socioeconomically disadvantaged people are twice as likely to have a long-term health condition as people who are the least disadvantaged.

International research points to factors that determine a person's health. Some of these relate to personal behaviours, but others relate to the difference in socioeconomic status and how these interact. Pregnancies where the mother doesn't smoke, drink or take drugs are understood to be fundamental to a child's lifelong development. So too is the learning that occurs in a child's first three years of life. School completion, successful transition into work, secure housing and access to resources necessary for effective social interaction are all determinants of a person's lifelong health. This research on the social determinants of health culminated in the World Health Organisation making a series of recommendations in its 2008 *Closing the Gap Within a Generation* report (WHO 2008).

In 2010 the Catholic Health Australia (CHA) and the National Centre for Social and Economic Modelling (NATSEM) released the first CHA-NATSEM Report on Health Inequalities *Health lies in wealth: Health inequalities in Australians of working age* (Brown and Nepal 2010). That report investigated socioeconomic inequalities in health outcomes and lifestyle risk factors of Australians of working age and showed that socioeconomic gradients in health exist in Australia.

## Early years: Australian Early Development Index (AEDI)

Recognising the importance that early life experience has on long-term health and wellbeing led to the development of the AEDI to measure child welfare in early life. In 2009, the AEDI collected data on 261,147 Australian children (97.5 per cent of the estimated five year old population) in their first year of full-time school between 1 May and 31 July (DEEWR 2011).

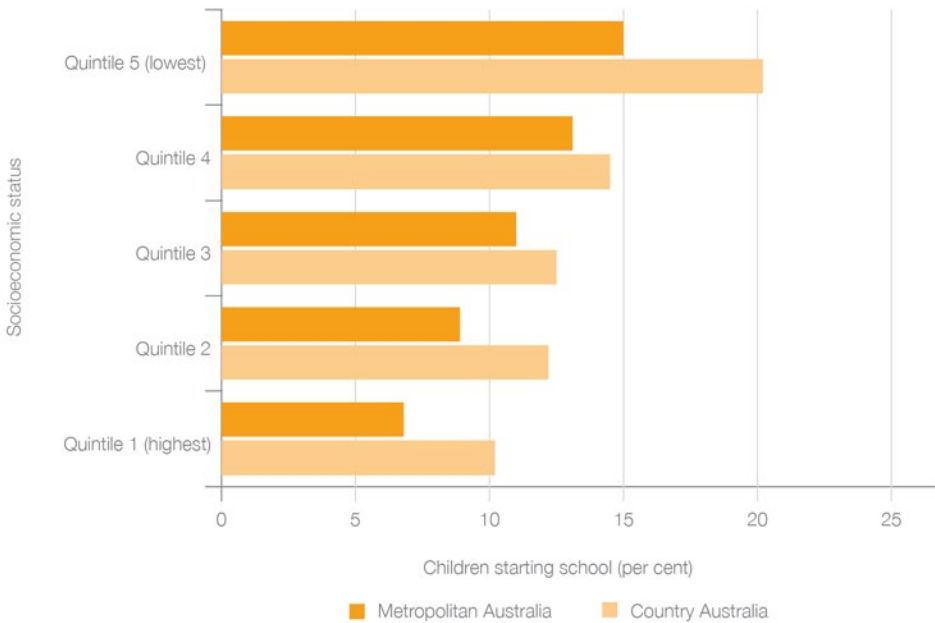
*Skate action at Port Kennedy Skate Park.*

Image courtesy of City of Rockingham, Perth



The initial results provide communities and schools with information about how local children have developed by the time they start school across five areas: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills (schools-based), and communication skills and general knowledge. They show disparities between country and metropolitan areas (Figure 5-20).

**Figure 5-20** Developmentally vulnerable children by socioeconomic group and region, AEDI 2009



Note 1: Metropolitan includes the capital cities and any urban centre with a population of 100,000 or more at the 2006 Census. These urban centres are Newcastle, Wollongong (NSW), Geelong (VIC), Gold Coast – Tweed Heads and Townsville–Thuringowa (QLD).

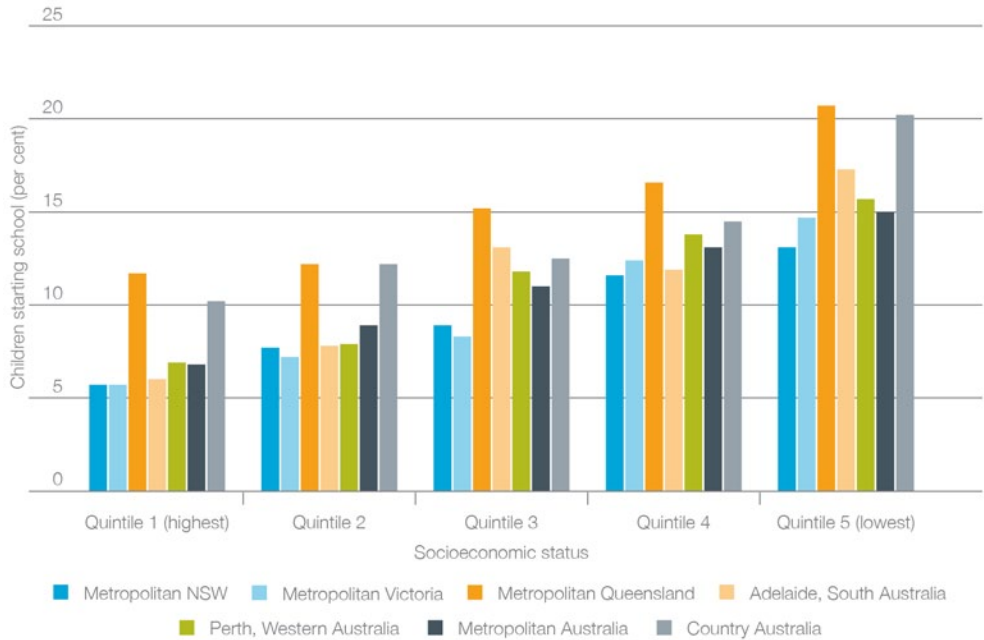
Note 2: Per cent of children starting school who were reported as developmentally vulnerable on two or more domains on the Australian Early Development Index (AEDI) in 2009.

Source: PHIDU 2012 based on AEDI scores for 2009

Although in Figure 5-21, a smaller proportion of children appear to be developmentally vulnerable in metropolitan areas than in country Australia, this is not the case in all jurisdictions. There are considerable differences between metropolitan areas across Australia. As shown in Figure 5-21, a greater proportion of children were reported to be developmentally vulnerable on two or more domains across all socioeconomic quintiles in metropolitan Queensland than in other metropolitan areas and country areas. Further analysis is required to determine the reasons for this, however, the greater distance between Queensland's regional cities and Brisbane may be one contributing factor.



**Figure 5-21**      **Developmentally vulnerable children by socioeconomic group, selected states, AEDI 2009**



Note 1: Metropolitan includes the capital cities and any urban centre with a population of 100,000 or more at the 2006 Census. These urban centres are Newcastle, Wollongong (NSW), Geelong (VIC), Gold Coast – Tweed Heads and Townsville–Thuringowa (QLD).

Note 2: Per cent of children starting school who were reported as developmentally vulnerable on two or more domains on the Australian Early Development Index (AEDI) in 2009.

Source: PHIDU 2012 based on AEDI scores for 2009

## Physical activity

There are few other lifestyle or health interventions that are as beneficial for individual and public health as regular physical activity (Sallis, Millstein and Carlson 2011). There is reasonable evidence to suggest that better designed streets, paths and roadways can encourage more physical activity for transport and recreation. These include a well-connected street network, safe off-road bicycling and walking pathways, accessible quality open space and low traffic volumes (Sallis, Millstein and Carlson 2011).

### Walkable neighbourhoods

Many people walk to their local shops, cafes or services such as the post office or library. Others walk on a daily basis to their place of work or study. Most public transport journeys start and end with a walk from a bus stop or train station.

Walkability refers to the extent to which the built environment supports or hinders walking in terms of safety, connectivity and convenience. Walking is not only healthy but it helps to ease traffic congestion and reduce emissions (Queensland Department of Transport and Main Roads 2011). Walkable neighbourhoods can provide ease of access to employment, education and services.

## Measuring walkability

Melbourne University's Place, Health, and Liveability Program is developing an open source walkability tool in collaboration with the University of Western Australian. The walkability tool will initially be used to calculate a walkability index for Victoria, to be subsequently applied across Australia. This work is being funded by the Australian Urban Research Infrastructure Network.

Walk Score ([www.walkscore.com](http://www.walkscore.com)) is a public walkability index developed in the United States that assigns a numerical walkability score to any address in a number of countries, including Australia. It calculates a direct-line distance between retail, food, school, entertainment and recreational facilities, providing a useful guide to the walkability of a location. Walk Score is increasingly being used by home purchasers in considering the desirability of the location of a prospective home.

*Captain Cook Highway intersection, Cairns.*

Image courtesy of Chay Garde



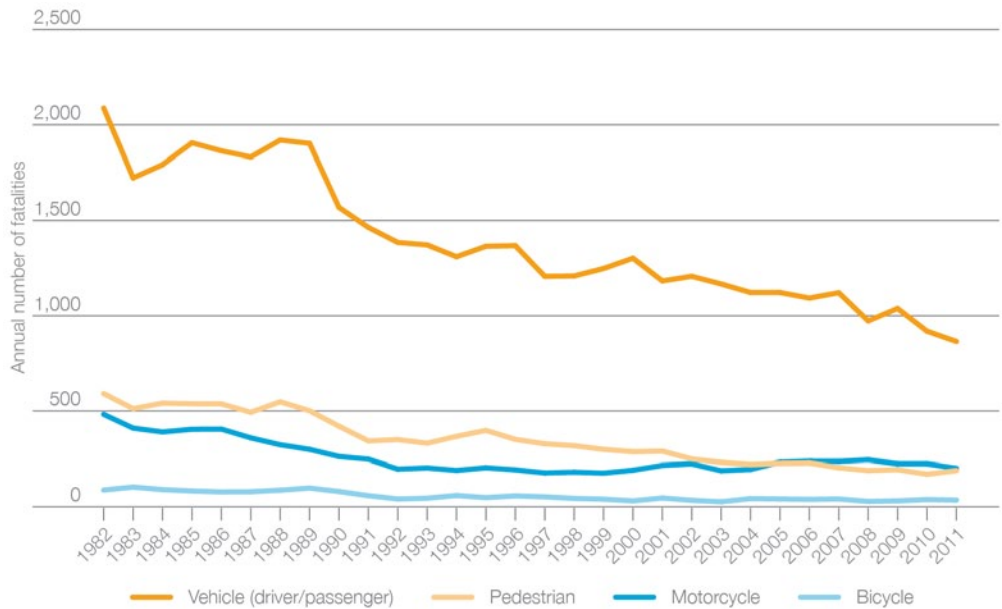
## Safety

An individual's sense of safety for themselves, their families and their property is an important attribute of liveability, as reflected in surveys such as the My City survey noted earlier in this chapter. A sense of safety is generally associated with actual or perceived rates of injury or death, such as by motor vehicle crashes or at the hands of other people through assault, damage to property or theft.

## Road safety

In May 2012, BITRE published the annual *Road Deaths Australia – 2011 Statistical Summary*. This report focuses on fatalities based on jurisdiction, age group and other characteristics.

Figure 5-22 Road fatalities in Australia by road user type, 1982–2011



Source: BITRE 2012a

As shown in Figure 5-22, there has been an average annual decline of 3.1 per cent in the total number of road fatalities over all categories in Australia between 1982 and 2011 (BITRE 2012a).

The National Road Safety Strategy, agreed by Commonwealth, state and territory transport ministers, presents a plan to reduce both deaths and serious injuries on Australian roads by at least 30 per cent over the decade to 2020.

Children and older people are especially vulnerable as pedestrians and road users. A greater proportion of children and young people aged up to 25 years and older people aged over 65 years use public transport. This means that at transport interchanges, bus stops and train stations design for pedestrian safety is especially important.

## Crime prevalence and perception

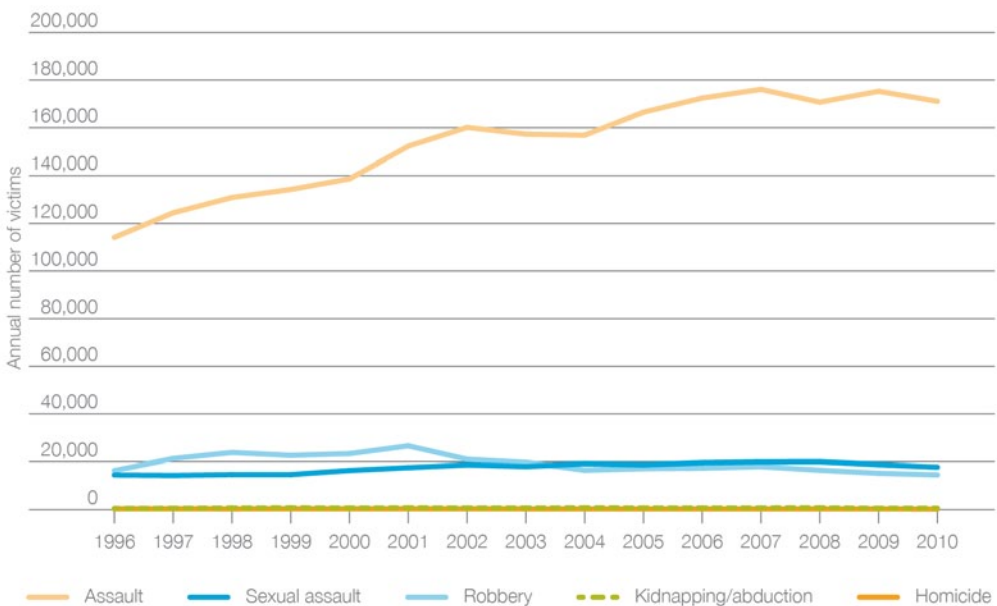
Are Australian cities safe compared to other cities around the world? Measuring safety is very difficult and only broad observations are possible. There are a number of ways to compare crime rates between countries. One way is by comparing rates of a signature crime like homicide, which in Australia are the lowest they have been for a century (ABS 1997, Dearden and Jones 2009). On this measure, Australia sits in the middle of the band of countries in northern Europe. There is a similar pattern for both property and violent crime more generally, suggesting that rates in Australian cities, taken as a whole, are about the level of most cities in northern Europe and much safer than many cities around the world (UNODC 2012).

## Recording crime in Australia

Crime in Australia is mainly measured by two methods: police records and crime victimisation surveys. Police records from states and territories are aggregated by the ABS using the Australian and New Zealand Standard Offence Classification (ANZSOC) to accommodate the differences in how crime is categorised across jurisdictions in Australia. Though much improved, the system is far from perfect and a description of the police data issues can be found in the Australian Institute of Criminology's *Australian Crime: Facts and Figures 2011* publication, the source of the data in this section.

Crime is commonly divided into two types: violent crime and robbery. Figure 5-23 shows that most types of violent crime in Australia have been stable or falling over the last decade, and numbers of assault victims have been relatively stable since around 2005 after rising during the 1990s.

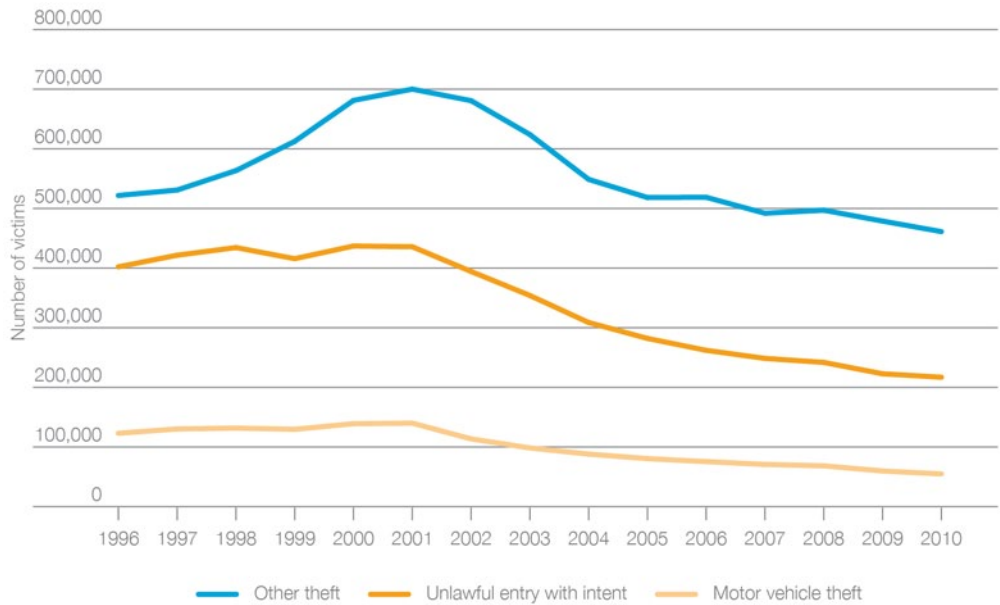
**Figure 5-23** Number of victims of selected violent crimes, Australia, 1996–2010



Source: Australian Institute of Criminology 2012

The rates of property crime in Australia, as in most developed countries, have fallen steeply since around 2000, as shown in Figure 5-24. There seems little general agreement on the cause of this, although improved economic conditions and improved security are thought to play a part.

Figure 5-24 Victims of property crime, Australia, 1996–2010



Source: Australian Institute of Criminology 2012

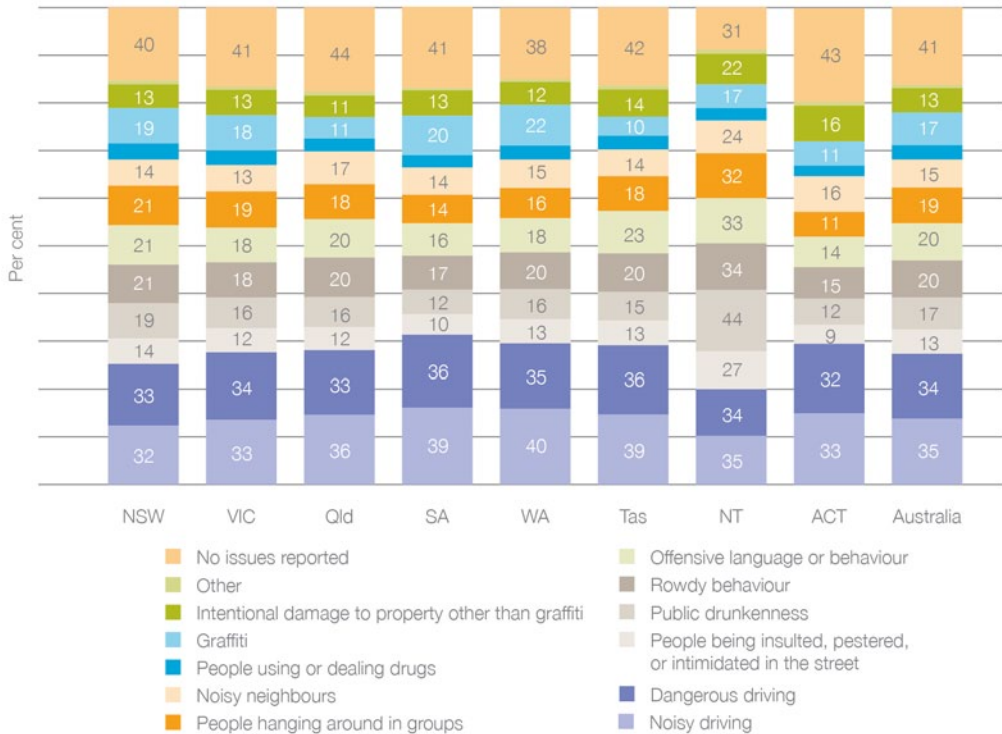
Crime rates vary significantly across states and territories as well as within cities. Despite the common perception that living in a country area is safer, some regional towns have crime rates that far exceed capital cities (Goh and Moffatt 2012).

### Perceived social disorder

The perception of crime can sometimes be worse than reported crime. Perceptions of levels of crime and feelings of safety in a particular area may be based on personal experience or observation of a range of activities that are considered to signify social disorder. Social disorder refers to antisocial behaviour that may or may not constitute a criminal offence – for example, public drunkenness, noisy neighbours and offensive language or behaviour. This can detract from people’s subjective estimation of the liveability of the areas in which they live, work or travel through. Perceived levels of crime can also be influenced by media reports of social disorder within an area.

Data about perceived social disorder in local areas is available from the ABS Multi-household survey. In the 2010–11 survey a total of 26,405 households or 81 per cent of the sampled households fully responded to the questions on perceived social disorder. While city level data is not available, the results at state and territory level (Figure 5-25) show that the highest proportion of residents who perceived their area as not having any issues with social disorder to report lived in Queensland (44 per cent), the Australian Capital Territory (43 per cent) and Tasmania (42 per cent). Conversely, the Northern Territory and Western Australia had above the Australian average proportion of people who reported at least one issue of social disorder.

Figure 5-25 Perceived social disorder issues in local area, by state and territory, 2010–11



Source: ABS 2012f

The data on perceived social disorder suggests that driving behaviours, including noisy driving or dangerous driving, were the most commonly reported acts of social disorder in each jurisdiction except for the Northern Territory, where public drunkenness was the most frequently reported concern.

### Variation in crime rates within cities

Crime rates are strongly influenced by socioeconomic conditions and as such vary significantly across cities (Wortley and Mazerolle 2008). Data at the local government level can give some idea of the extent of variation. Some local government areas of Sydney, for example, have 10 times the violent crime rate of others (Goh and Moffatt 2012). Since it is known that crime will be further concentrated in a small segment of these local government areas (Ratcliffe and McCullagh 1999, Cozens 2011), it follows that the crime victimisation risk is significant in particular places and times and very low in others. The feature article contributed by Dr Bruce Doran from the Fenner School of Environment and Society at the Australian National University, explores how the perception of risk of crime in particular places affects the way people move through cities.

## Mapping behavioural responses to fear of crime

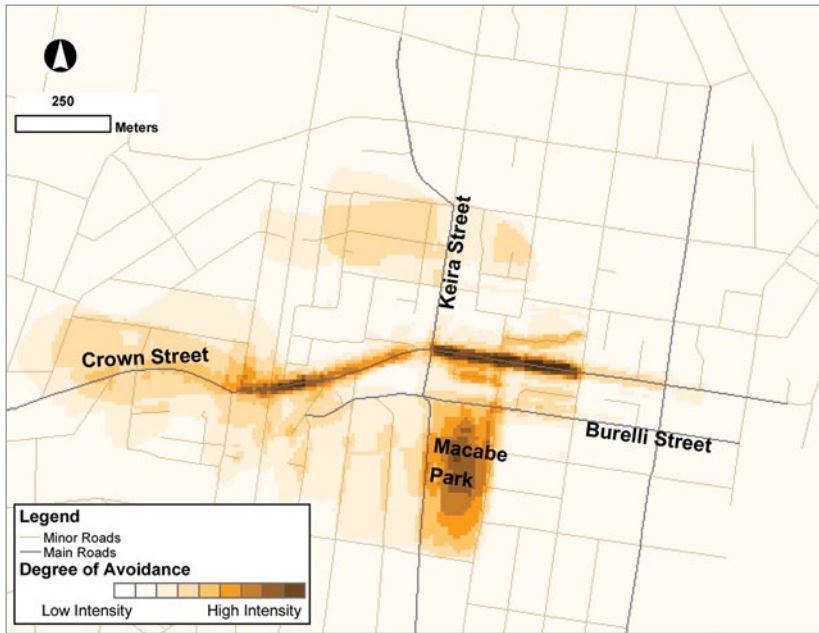
Fear of crime began to emerge as an issue of concern in the 1960s when national and international crime surveys began to incorporate questions relating to the public's perception of crime. Such surveys generally used variations of the question '*How safe do you feel walking alone at night in your neighbourhood*', an approach that has endured and is now the global measure. The findings from fear of crime surveys have been consistently alarming with between 20 and 30 per cent, and in some cases up to 60 per cent, of respondents indicating that they feel unsafe in their neighbourhoods. Victims of crime, people of non-Caucasian origin, the elderly and women are generally found to have higher levels of fear than the rest of society. Further, fear of crime has been found to be a problem in areas with low rates of crime as well as areas with high rates of crime (Figure 5-26).

One of the most deleterious impacts of fear of crime is that it prompts behavioural responses which, in turn, can have an influence on quality of life. This has given rise to numerous media reports that fearful people can become 'prisoners in their own homes', an assertion that captures public and policy attention. In this regard, fear of crime can be seen as a form of social exclusion because, through avoiding areas perceived as dangerous, individuals have limited access to public facilities or services.

From a management perspective, the public traditionally look towards police services as the primary institution responsible for addressing fear of crime. Indeed, reducing fear and promoting safety are often enshrined in the mission statements of police agencies. Former NSW Police Commissioner Ken Moroney has gone so far as to state that fear of crime 'is as debilitating as the crime itself' (Cameron, 2002). Despite such recognition, to date there have been few tools available to police to investigate fear of crime. Recent research in Australia and other countries has started to use mapping approaches to investigate fear of crime (e.g. Barker 2010, Doran and Burgess 2011, Khom 2009). The spatial outputs from such work delineate where and when people are afraid of crime. Such information can be used directly in strategic responses to reduce fear of crime. For example, a mapping project in Wollongong (see Doran and Burgess 2011) identified the areas that people working in the CBD were avoiding due to their personal fear of being robbed, beaten or attacked. The outputs, when analysed at a collective level, showed that 'hotspots' of fear were well defined and varied according to time of day.



Figure 5-26 Fear of crime hotspots in the central business district of Wollongong between 5:30pm and 7pm

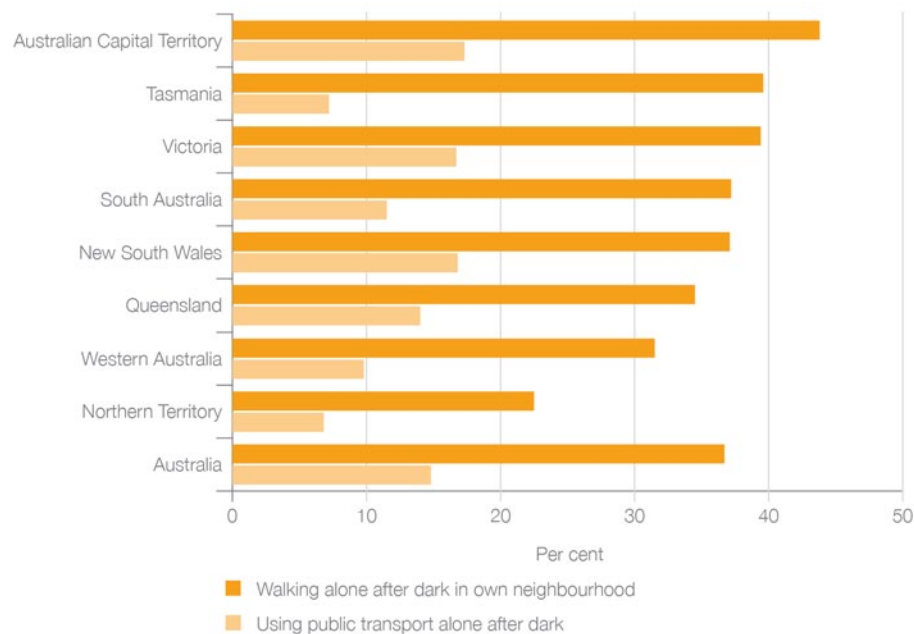


Source: Doran and Burgess 2011, p. 122

When combined with spatial data on crime and disorder, it became clear that the Wollongong City Council (WCC) could play a significant role in fear reduction initiatives through city centre revitalisation strategies. Further, the fear mapping outputs were used to identify lead and partnership agencies in relation to specific programs set out in the crime prevention plan for the CBD (WCC 2007). Of note was the fact that the WCC often identified the NSW Police as having a supporting role, rather than a lead role, and that other city centre management partners could also make significant contributions. When similar fear mapping techniques were used in conjunction with an ongoing initiative in the Kings Cross area of Sydney, the findings were used to assess the effectiveness of high-visibility policing and to uncover underlying motivations for fear of crime in the area. Given that most local government organisations and police agencies have access to Geographic Information Systems (GIS) through trends towards ‘spatially-enabled’ government, there would seem to be many further avenues for developing localised fear mapping programs.

Individual perceptions of safety vary not only by specific locations in cities but also how safe they feel moving around. How safe people feel travelling by different modes of transport is collected by the ABS in the crime victimisation survey (ABS 2012f). The data is not available at the city level but the state and territory results (Figure 5-27) suggests that a greater proportion of people feel safe in the Australian Capital Territory than other states and territories, and that the Northern Territory is considered least safe.

**Figure 5-27** Feelings of safety described by persons aged 15 years and over, by states and territories – proportion of persons who reported they feel safe or very safe travelling alone after dark by mode, 2008–09



Note: Refers to mainly urban areas only.

Source: ABS 2010

## Affordable living

In cities where the cost of living is relatively low, people in the lower income groups can still generally meet their needs. However, where the cost of living and housing is high, people in the lowest socioeconomic brackets can experience multiple disadvantages.

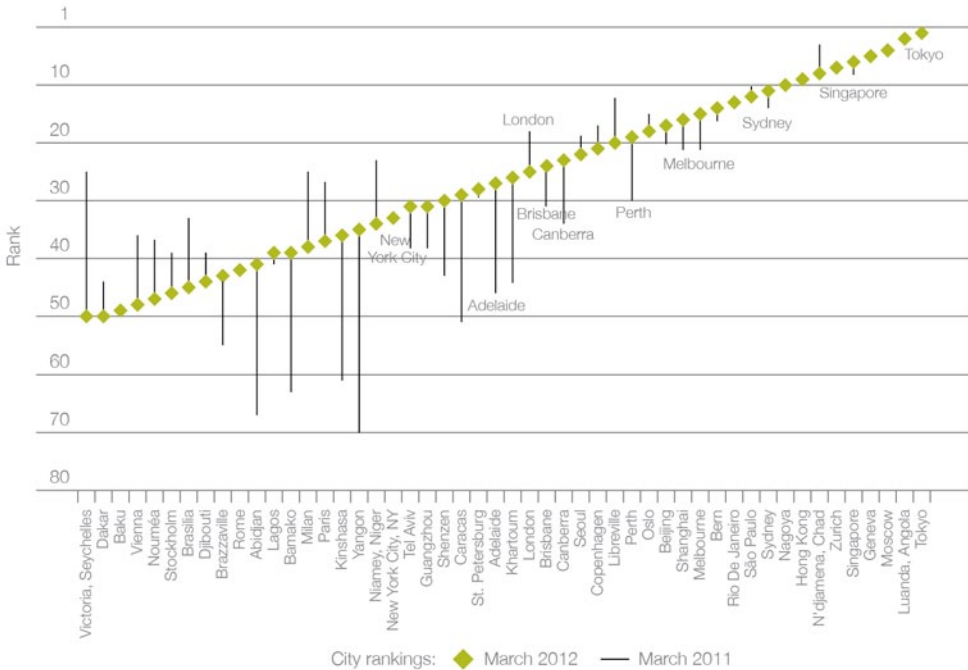
## Cost of living

### International cost of living ranking

Similar to the quality of life or liveability rankings, Mercer Ltd undertakes an annual cost of living survey to measure the comparative cost of living for expatriates (from the United States of America) in 214 major cities world-wide (Mercer 2012). The survey compares over 200 items in each location, including housing, transport, food, clothing, household goods and entertainment, using New York City as the base city and the US dollar as the base currency.

Figure 5-28 shows that, for Australian capital cities, the six cities surveyed have risen in the cost of living city rankings in the past year, indicating that they have become relatively more expensive cities to live and work in.

Figure 5-28 Mercer International – global cost of living city ranking – top 50 cities 2012



Note: Mercer international basket including rental accommodation costs. Base city: New York, United States.

Source: Mercer International Ltd 2012

Two main factors determine a city's position on the cost of living ranking: the relative strength of the currency against the US dollar in the 12 months between ranking and the price movements over the 12-month period compared to those in New York City as the base.

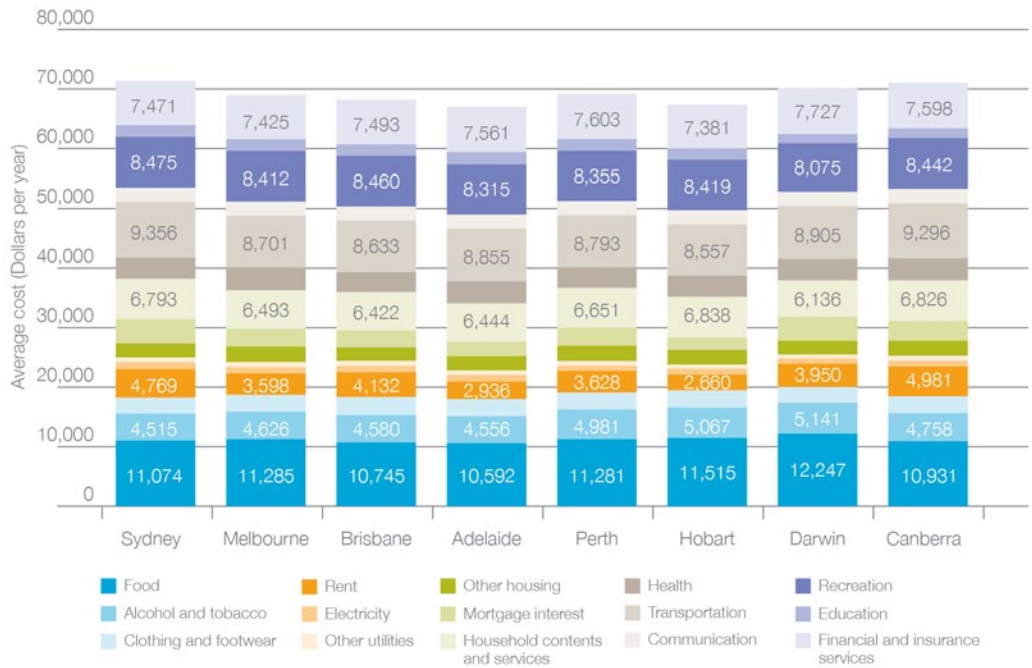
In the case of Australian cities in 2012, the main contributing factor for their increased cost of living has been the strength of the Australian currency to the US dollar which has stayed close to or above parity for the 12 months to March 2012. Nonetheless there have been a number of cost of living increases for different household expenditure items – in particular, housing and transport.

### Cost of living in Australian capital cities

While Australian cities may be more expensive for international tourists or workers, the cost of living for Australian residents in Australia's capital cities has been relatively stable for over two decades according to the 2012 AMP NATSEM *Income and Wealth Report* (Phillips, Li and Taylor 2012).

As shown in Figure 5-29, Sydney is the most expensive city among Australian capitals, with the highest average costs for electricity, mortgage interest, transport and recreational activities. Canberra, the second most expensive city, has the highest costs for rent, utilities (other than electricity) and household contents and services. Food, alcohol and tobacco, and financial services and insurance are most expensive in Darwin, while Melbourne has the highest health costs and Perth has the highest education costs. Communication costs are highest in Canberra, Hobart and Darwin (Phillips, Li and Taylor 2012).

Figure 5-29 AMP NATSEM cost of living capital city comparisons 2011

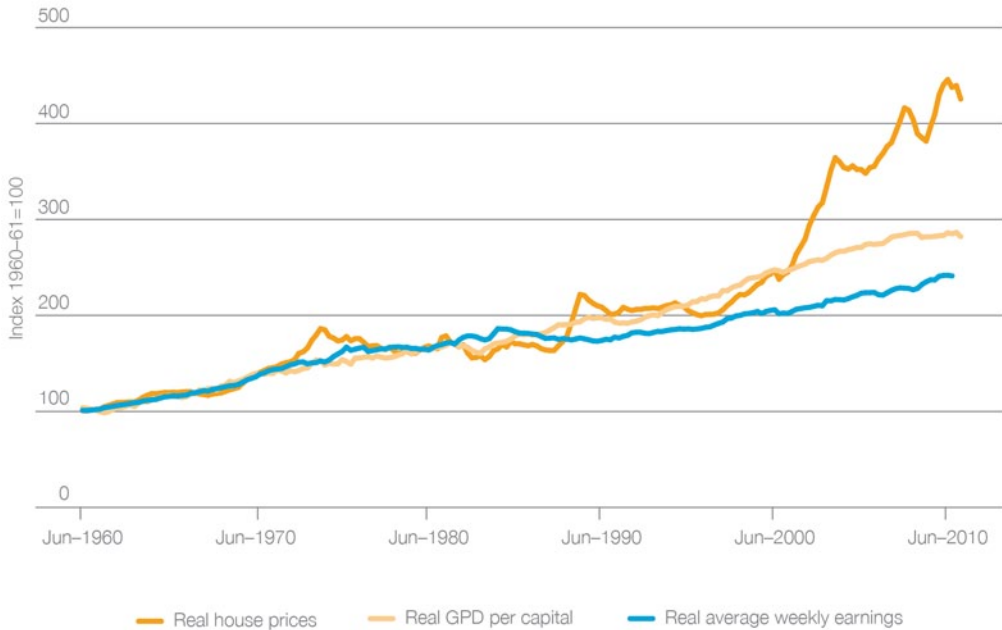


Source: Phillips, Li and Taylor 2012

## Housing affordability

The concept of housing affordability does not have a universally agreed definition. For this report, the term ‘housing affordability’ aligns with the National Housing Supply Council definition. It is housing that is affordable for households on low to middle incomes, when housing costs are low enough to enable the household to meet other basic long-term living costs. For example, housing costs should be less than 30 per cent of household income for occupants in the bottom 40 per cent of household incomes (National Housing Supply Council 2011). Therefore ‘low income’ households will be defined as households in the lowest 40 per cent of incomes, and ‘housing stress’ will be used to describe households spending more than 30 per cent of household income on housing costs. It is important to note that some households, particularly those in higher income brackets, choose and can afford to spend more than 30 per cent of their income on housing (Productivity Commission 2011). This discussion on housing affordability complements the discussion on housing supply and costs in Chapter 2.

Figure 5-30 Real house prices, GDP per capita and average weekly earnings 1960–2011



Source: Yates 2011

Real house prices in Australia have become significantly less affordable since 2000 (Figure 5-30). Compared to growth in both average weekly earnings and real GDP per capita, house prices have increased significantly since the turn of the millennium.

## Housing and rental stress

Mean housing costs since 1994–95 have increased by around \$100 per week for both renters with private landlords and home owners with mortgages. In both cases, most of this increase has occurred since 2000–01, as shown in Figure 5-31. Activity in the housing market around this time may relate to changes to Capital Gains Tax in late 1999 and the introduction both of the GST on housing and the First Home Owners Scheme in mid-2000 (Australian Government 2008). Simultaneously, no significant change in costs has occurred for renters of government housing or outright home owners.

Figure 5-31 Mean housing costs per week



Source: ABS 2011b

The cost of housing and rent can severely affect low- and middle-income households. Where housing or rental costs are greater than 30 per cent of household income for low- and middle-income households, this creates what is referred to as 'housing stress' or 'rental stress'.

Figure 5-31 illustrates that mean housing costs since 1994–95 to 2009–10 increased by around \$100 per week for both renters with private landlords and home owners with mortgages. In both cases, most of this increase occurred since 2000–01. No significant change in costs has occurred for renters of government housing or outright home owners during this time.

Figure 5-32 illustrates the distribution of housing costs by tenure type. In 2009–10, home owners without a mortgage largely incurred the lowest weekly housing costs, followed by renters of social housing. Renters with private landlords have a higher distribution of weekly housing costs, largely greater than \$150. Home owners with a mortgage appear to generally spend the highest dollar amount per week on housing, with almost 44 per cent spending \$400 or more at this time.

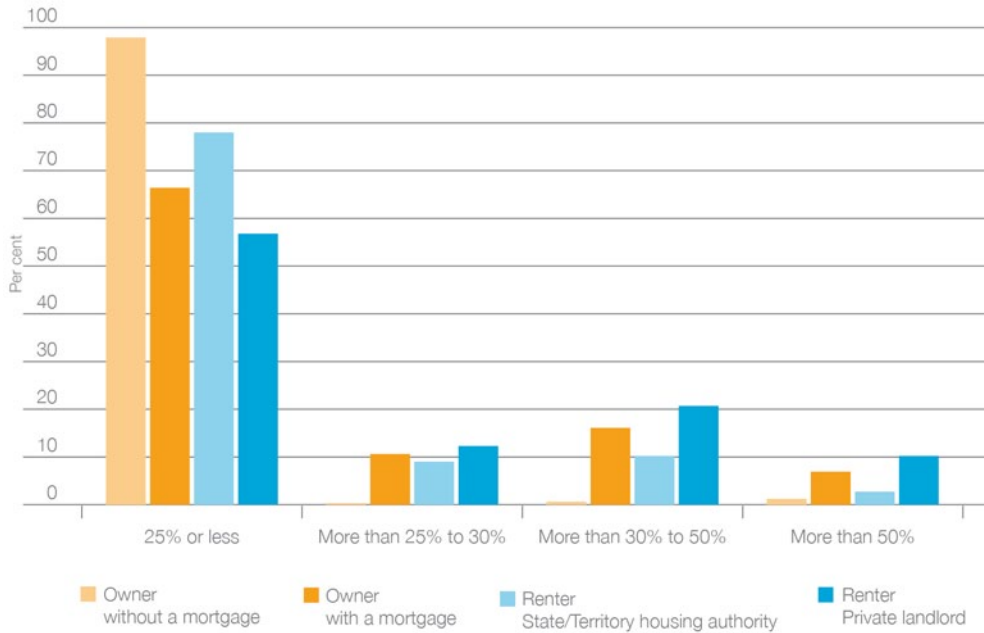
Figure 5-32 Distribution of weekly housing costs 2009–10



Source: ABS 2012e



Figure 5-33 Weekly housing costs as a proportion of gross income 2009–10

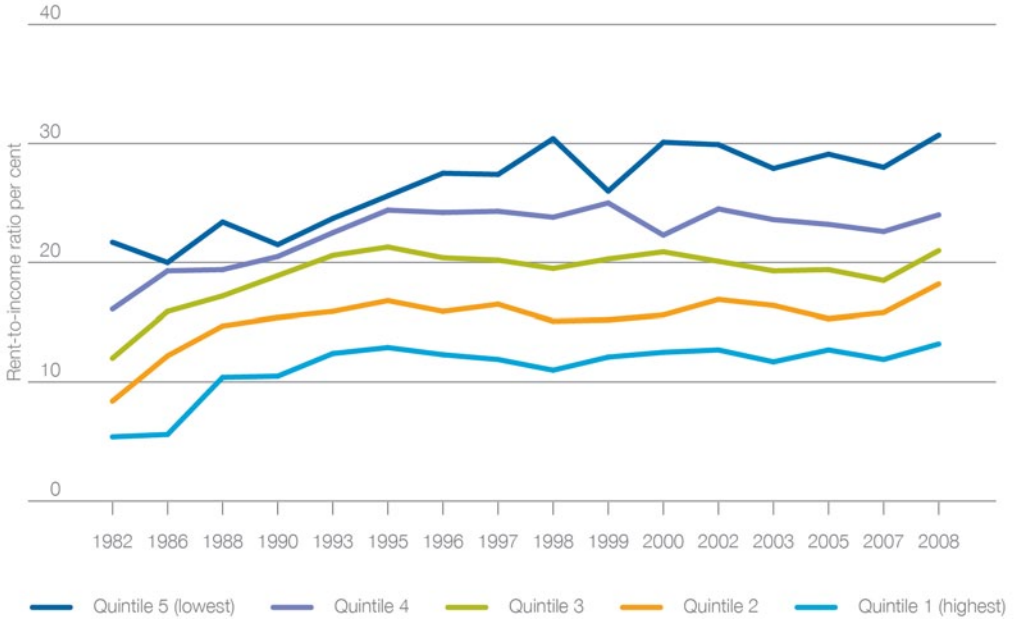


Source: ABS 2011b

Figure 5-33 illustrates that in 2009–10 outright home owners appeared understandably to not experience housing stress, with almost 98 per cent of outright home owners spending 25 per cent or less of their gross income on housing costs. The majority of home owners with a mortgage and renters of both private and government housing also spent less than this proportion of their incomes on weekly housing costs, so were unlikely to be experiencing housing stress. Around 10 per cent of households living in these three types of occupancy arrangements living in these three types of occupancy arrangements spent 25 to 30 per cent of their gross household income on housing, potentially placing them at risk of housing stress, especially if their household income fell within the lowest income brackets.

If housing stress is defined solely as spending more than 30 per cent of household income on housing costs then in 2009–10 housing stress was experienced by 16.1 per cent of home owners with mortgages, 10.2 per cent of renters of government housing and almost 20.7 per cent of private renters. A further 6.9 per cent of owners with mortgages, 2.7 per cent of renters of government housing and 10.2 per cent of private renters could be said to have been experiencing acute housing stress – that is, spending more than 50 per cent of their household income on housing costs.

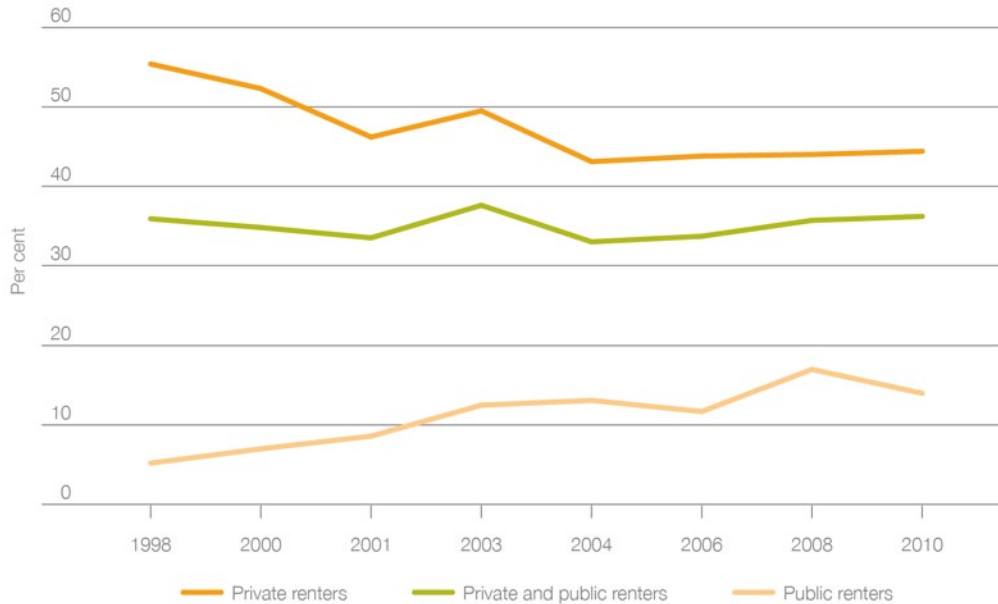
Figure 5-34 Rental affordability (rent to income ratio) by income quintile 1982–2011



Source: Richards 2012

Rental cost pressures, as measured by the ratio of rental costs to household income, increased over the period 1982 to 2000. Figure 5-34 shows that rental affordability appears to have been relatively stable in the decade since 2000. From 2002 to 2011, households in the lowest income bracket have been particularly at risk of housing stress because the rent to income ratio has remained at between 28 per cent and 31 per cent for that group.

Figure 5-35 Low-income private and public renters in rental stress(a)(b) – 1998–2010(c)



Note: (a) 2008 estimates are not directly comparable with previous cycles due to improvements in income collection.  
 (b) Households with nil and negative income are excluded.  
 (c) Year ending 30 June.

Source: ABS 2012a

Overall, housing has become less affordable over the past decade. While social housing costs per week have increased only slightly, a significant portion of social housing occupants appear to have recently been experiencing housing stress. The proportion of low-income households experiencing rental stress has also increased quite significantly in the past two decades (Figure 5-35). Significant increases in real house prices since 2000 appear related to notably increased costs for both home owners with mortgages and private renters.

## Accessibility

Accessibility is used here to mean access to the resources and opportunities that support wellbeing and social inclusion – and thereby broader social and economic prosperity. Cities with good accessibility mean that the spatial distribution of social and economic opportunities and the transport systems that connect people to them, allow people to meet their needs within reasonable time and at a reasonable cost.

Transport networks and services are critical to accessibility. Information and communication technologies are also important, offering additional ways to reach services and make and maintain social connections.

Transport disadvantage affects the capacity of individuals to ‘traverse urban space to undertake employment and to obtain the various goods and services that contribute to social wellbeing’ (Dodson et al. 2006, p.2). The relative costs of travelling into and around our

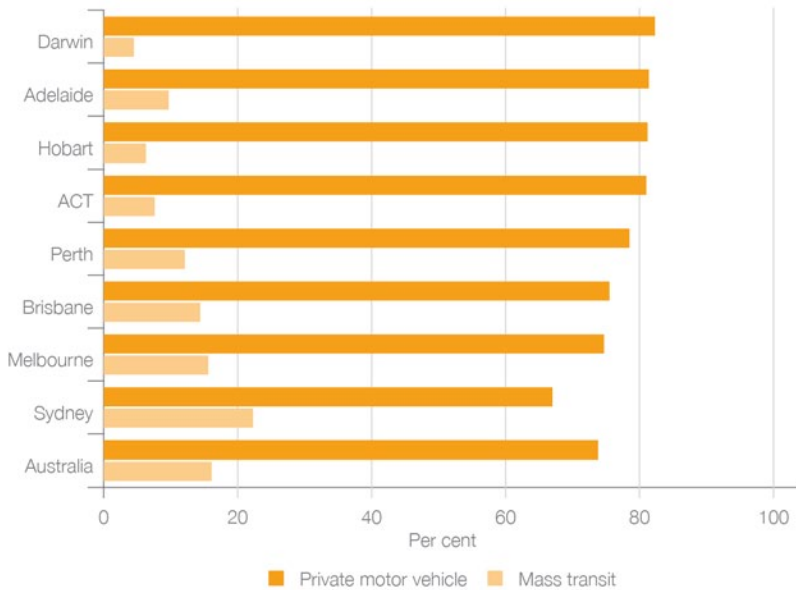
cities to reach essential services such as employment, education and health can influence choices regarding place of residence and place of employment.

### Travel to work

Preliminary results for *Methods of Travel to Work* from the 2011 Census (second release) show that travel by private motor vehicle remains the dominant mode for travel to work in each capital city.

The proportion of people whose main mode of travel to work was private motor vehicle was highest in Darwin (82.3 per cent) and lowest in Sydney (67.0 per cent). Conversely, Sydney had the highest proportion of people travelling to work on mass transit systems (22.3 per cent), while Darwin had the least (4.5 per cent), as shown in Figure 5-36.

**Figure 5-36** Main mode of travel to work in capital cities, 2011



Note: Employed persons aged 15 years and over who 'went to work' includes people who worked at home, but does not include employed persons who did not go to work.

Source: ABS 2012e

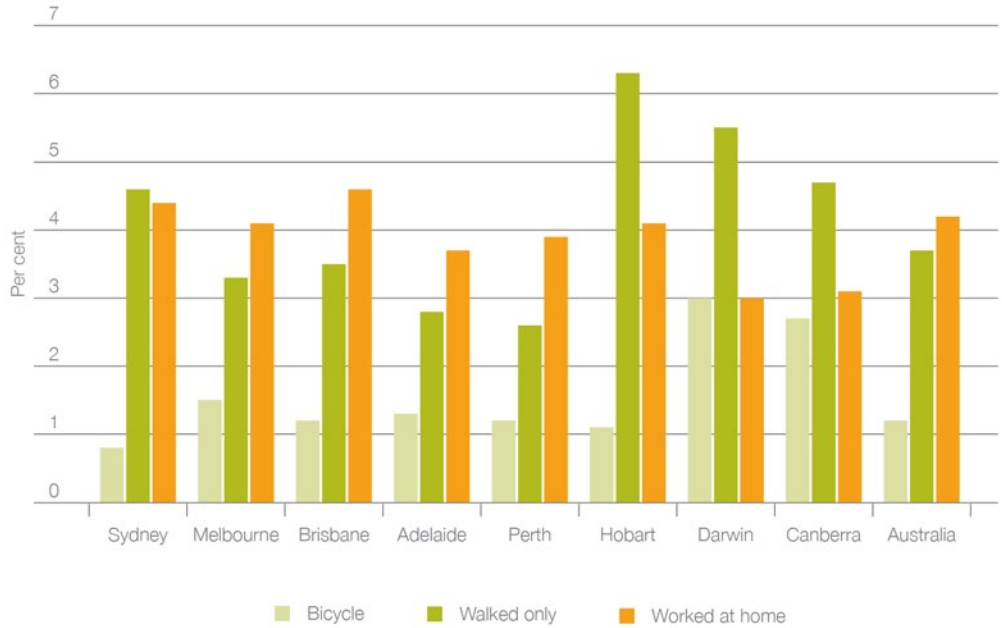
Only a small proportion of people in 2011 walked or cycled as their main mode of travel to work or worked at home.

As Figure 5-37 shows, Hobart had the highest proportion of people who walked (6.3 per cent), while Perth had the lowest (2.6 per cent).

Cycling was the main mode of travel to work for three per cent of people in Darwin, and 2.7 per cent of people in the Australian Capital Territory. Of the larger capital cities, Melbourne had a significantly higher number of people for whom cycling was the main mode of travel to work (1.5 per cent) than Sydney (0.8 per cent).

Across Australia, just over four per cent of people worked at home. This is reflected in the data for capital cities, with slightly higher proportions of people working at home in Brisbane (4.6 per cent) and Sydney (4.4 per cent), and lower proportions in the Australian Capital Territory (3.1 per cent) and Darwin (three per cent).

Figure 5-37      Selected non-motorised modes of travel to work in capital cities



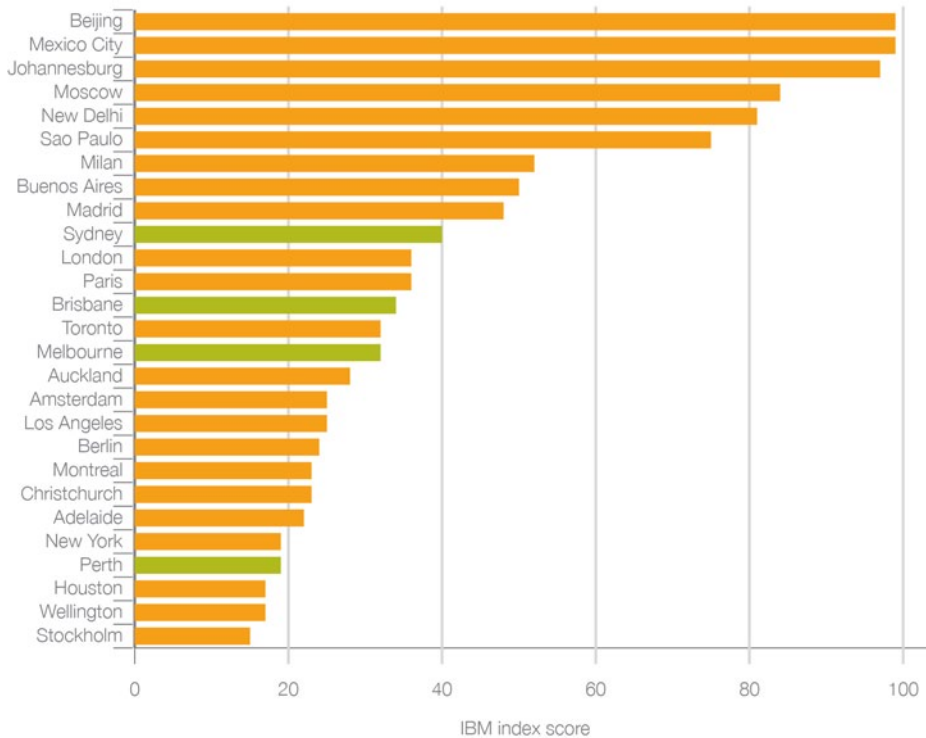
Note: Employed persons aged 15 years and over who 'went to work' includes people who worked at home, but does not include employed persons who did not go to work.

Source: ABS 2012e

Even for short distances, the dominant mode of travel is private motor vehicle. The Australian Government's *Walking, Riding and Access to Public Transport draft report for discussion* (Department of Infrastructure and Transport 2012) shows that of commuters travelling less than five kilometres to work or study, nearly 70 per cent travel by car. This represents nearly 14 per cent of all trips to work. The report explores how governments, businesses and the community can work together to encourage walking and cycling as part of an effective transport system in Australia, as a more sustainable, time efficient and cost effective alternative transport mode option for many short trips.

Australian cities are not unique for high levels of dependence on private motor vehicles. The recent *IBM Australian Commuter Pain Survey, 2011* gauges commuters' perceptions of the impacts of traffic and related issues. Figure 5-38 shows how commuters in five Australian cities rated those cities for commuter pain. The Australian cities occupy rankings between the middle and lower end of the 27 cities included in the survey.

Figure 5-38 IBM Australian Commuter Pain Survey, 2011



Source: IBM Australia 2011

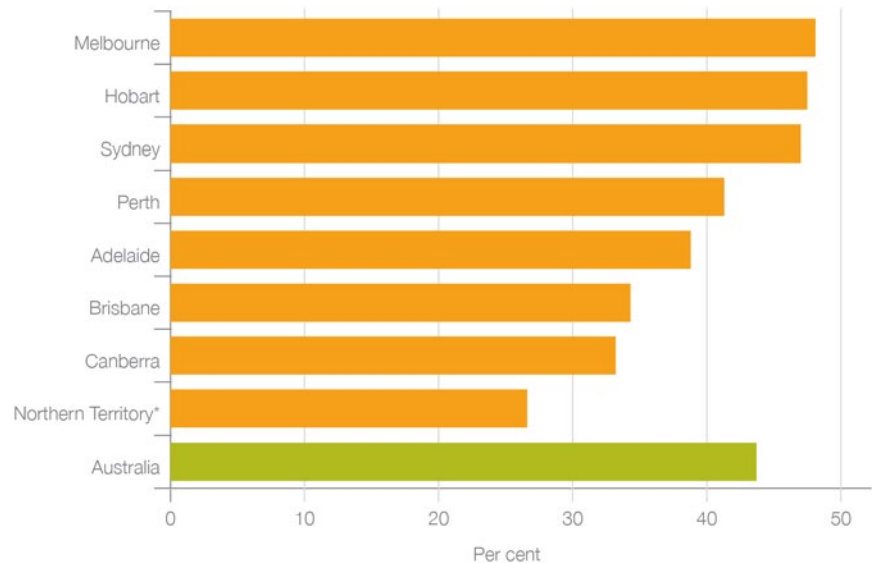
## Active travel

Commuter travel represents only one of many travel purposes in cities. In Sydney, for example, commuting accounts for between 15 per cent and 16 per cent of all trips annually (BTS 2012). The average trip distance for commuting in Sydney was 14.4 kilometres in 2010–11. This is around twice as far as trip distances for other purposes such as social and recreational (7.8 kilometres), education and childcare (7.3 kilometres), personal business (6.7 kilometres) and shopping (5.2 kilometres).

Compared to commuting, a greater proportion of trips for these other purposes are made using 'active travel' modes – walking, cycling or public transport. More than a quarter of education and childcare trips (26 per cent) were made using public transport, while walking accounted between one-fifth and one-third of all trips in Sydney in 2010–11 for personal business (21 per cent), shopping (28 per cent) and social or recreational travel (29 per cent) (BTS 2012).

Overall, more than four out of 10 (43.7 per cent) Australian adults who live in a capital city walk for day-to-day trips other than to work or study, but this varies considerably by location (Figure 5-39). Nearly half of Melbourne residents walk regularly for non-commuting purposes, compared to approximately one third of Brisbane residents (ABS 2012d). In Victoria, nine per cent of all trips in the metropolitan area are by public transport and 14.7 per cent are by bicycle or on foot (Department of Transport, Victoria, 2007). Up to 46.1 per cent of trips in the City of Melbourne are by bicycle or on foot, and a further 17 per cent are by public transport. In the City of Sydney, walking accounts for 93 per cent of all internal trips – around 1.2 million trips a day (Transport for NSW 2012).

Figure 5-39 Adults who regularly walk for day-to-day trips, other than to work or full-time study, by capital city



Source: Australian Bicycle Council 2012

Use of different transport modes also varies across age groups. Across the whole of metropolitan Sydney in 2010–11, people aged 70 and over have the highest proportion of walking-only trips (26 per cent) followed by 21–30 and 61–70 year olds (20 per cent for each). The 11–20 year old age group has the highest overall proportion of public transport trips (24 per cent), while the youngest age group (0–10) has the lowest (five per cent) (BTS 2012). Combining walking and public transport the 11–20 year old age group are the most active travellers, with 45 per cent of their trips made using active transport modes (BTS 2012).

Recognising the substantial role of active transport for accessibility, the *Draft Report on Walking, Riding and Access to Public Transport* is seeking public comment prior to the preparation of an Active Travel policy (Department of Infrastructure and Transport 2012). The draft report explores how a national approach might encourage walking and riding as a bigger part of the transport system in Australia’s cities and towns.

The report refers to active travel or active transport where human-powered mobility – such as walking or riding – is used for all or part of a transport journey. A public transport journey (by bus, train, ferry, or tram) is usually accompanied by a walk or ride to the transport stop or station.

All state and territory governments, and many local governments, have policies and programs in place to increase mode share of walking and riding. In addition, the *National Cycling Strategy 2011–16* which has been endorsed by all states and territories as well as the Australian Government, aims to double the participation rate in cycling between 2011 and 2016.



## Local government investment in cycling infrastructure

Local governments are largely responsible for building and maintaining local networks in Australia – more than 657,000 kilometres of roadways in total – in addition to off-road walking and cycling routes through parklands and along waterways.

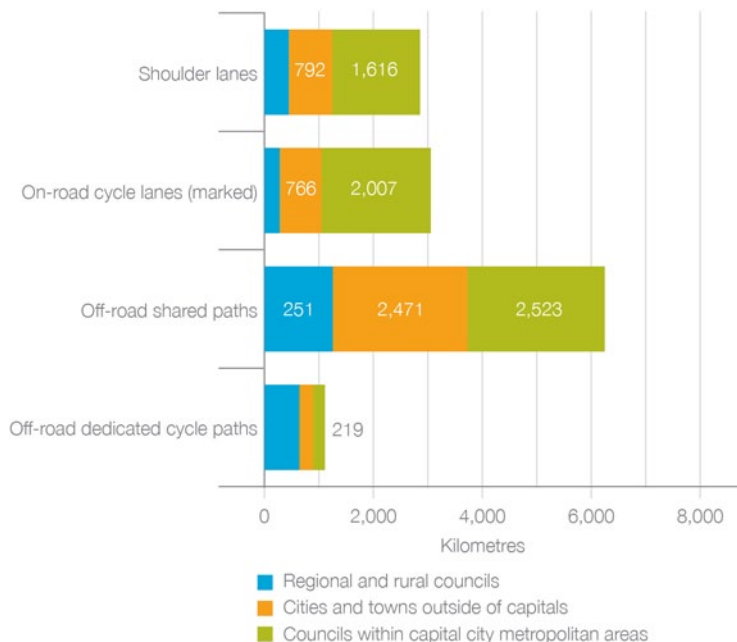
In mid-2011, local governments around Australia participated in a survey commissioned by the Australian Bicycle Council and the Australian Local Government Association, as a follow-up to a similar survey in 2007. Approximately 55 per cent of all local governments in Australia (305 councils) responded to the *Local Government Bicycle Account 2011* survey (Australian Bicycle Council 2012).

Of the councils that took part, more than two-thirds said they either have a bicycle strategy or are working towards one. The survey investigated the topics covered by council bicycle strategies (96 per cent included infrastructure and 75 per cent included bicycle signage), the start and end date of their bicycle strategies, and the extent to which they integrated with other council strategies and plans.

The survey found that 11,704 kilometres of cycling infrastructure had been built by local governments by June 2010. More than half (53 per cent) of the infrastructure was off-road shared paths. Urban-based councils had significantly more cycling infrastructure than non-urban councils.

Responding councils each had an average of 44 kilometres of on-road and 38 kilometres of off-road infrastructure – a significant increase from 2007 when responding councils had an average of 21 kilometres of on-road and 30 kilometres of off-road infrastructure (Figure 5-40).

Figure 5-40 Length of existing local bicycle network, June 2010



Source: Australian Bicycle Council 2012



*Bicycle way-finding, Albury-Wodonga.*

Image courtesy of Ben Cebuliak

as private philanthropists and community organisations. One such project is the River Cities Renewal Project in Parramatta.

Councils anticipate that, when their planned networks are complete, there will be 9,675 kilometres of off-road and 8,167 kilometres of on-road cycle paths – a total of 17,842 kilometres. This will represent a 52 per cent growth in their networks from 2010 figures.

The total expenditure on bicycle-related resources by responding councils in the 2009–10 financial year was \$72.9 million (\$46.6 million in capital cities, \$18.4 million in non-capital cities and \$7.9 million in rural and regional council areas). The average spend per council increased from \$194,000 in 2007 to \$239,000 in 2010.

The majority of the councils (71 per cent) reported receiving external funding, totalling \$54.7 million in the financial year. Of this, 48 per cent was funded by state governments to 140 recipients, an equal amount of 48 per cent was funded by the Australian Government and four per cent was donated to 17 councils from other organisations such

*Cairns.*

Image courtesy of Sara Stace



### River Cities Renewal Project, Parramatta

A joint project between the Australian and New South Wales governments and Parramatta City Council will form part of a continuous off-road shared path along the northern foreshore of the Parramatta River.



Image courtesy of Parramatta City Council

The River Cities Renewal Project, made possible through the Australian Government's Liveable Cities Program, will complete three missing links of the Parramatta Valley Cycleway providing a healthier, more sustainable commute between Westmead, Parramatta, Sydney Olympic Park and Meadowbank. The Parramatta Valley Cycleway is already the busiest shared route for commuters and recreational users in western Sydney.

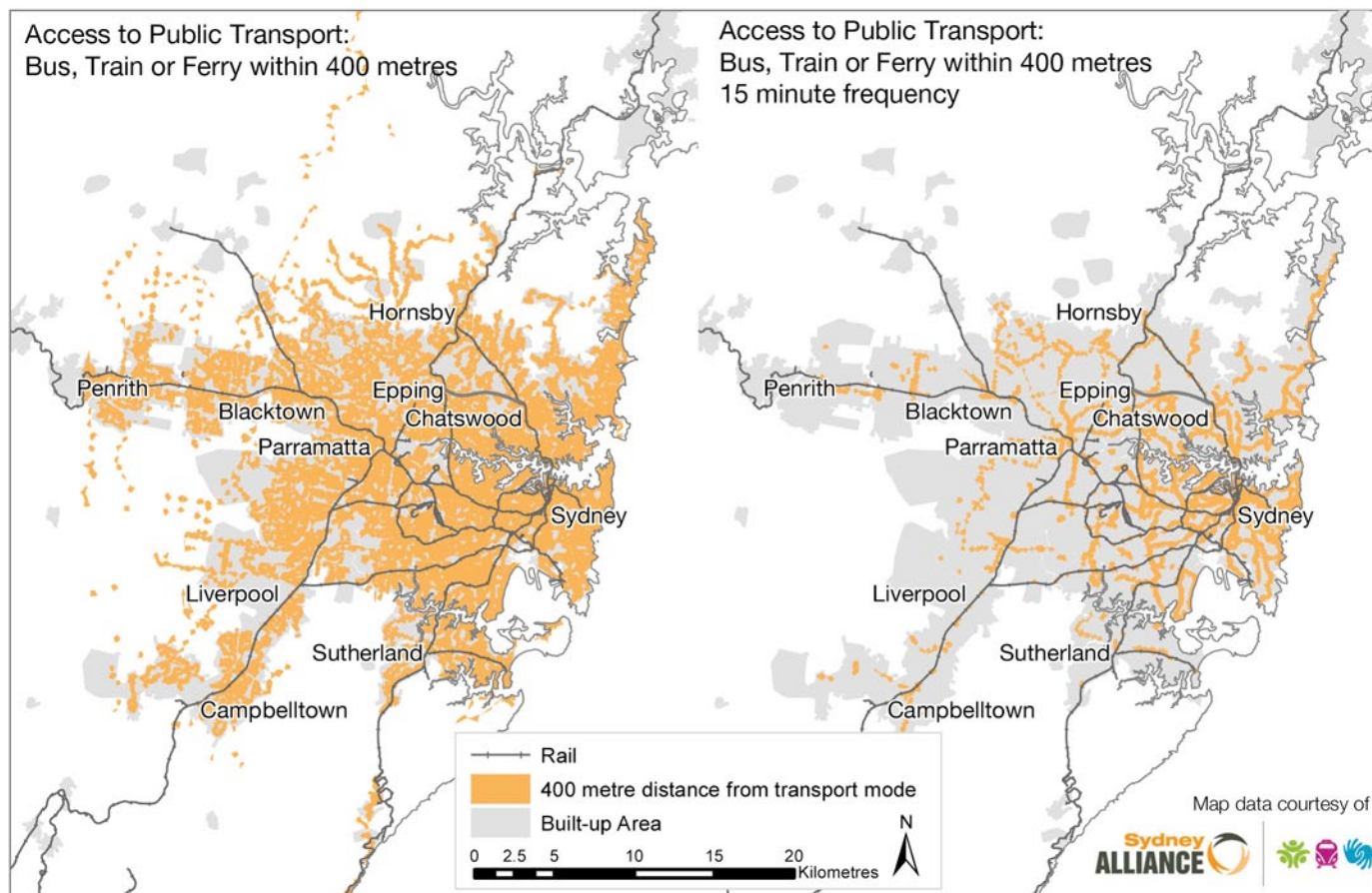
This project, due to be completed by 2016, will provide a continuous east–west active travel link between the University of Western Sydney Parramatta campus, current and future riverside medium-density housing developments and employment and public transport destinations in Parramatta's city centre.

### Access to public transport

The distribution of transport infrastructure and public transport services varies between and within cities. While most areas of the larger cities have coverage by public transport, when measured in terms of frequency of services, many areas lack accessibility. In Sydney, for example, mapping of the public transport network for the Sydney Alliance (Troy and Iveson 2012) shows that access to public transport within 400 metres of transport modes is very high with coverage over most of the city. However, when only those public transport stops that have a service frequency of every 15 minutes or less were selected, access to public transport services in Sydney appears less accessible in many areas beyond a 10 kilometre radius of the Sydney CBD (Figure 5-41).



Figure 5-41 Proximity to public transport (bus train and ferry) stops in Sydney, 2012



Source: Maps courtesy of Troy and Iveson 2012 and Sydney Alliance 2012 based on data provided by the NSW Government's Transport Data Exchange Program.

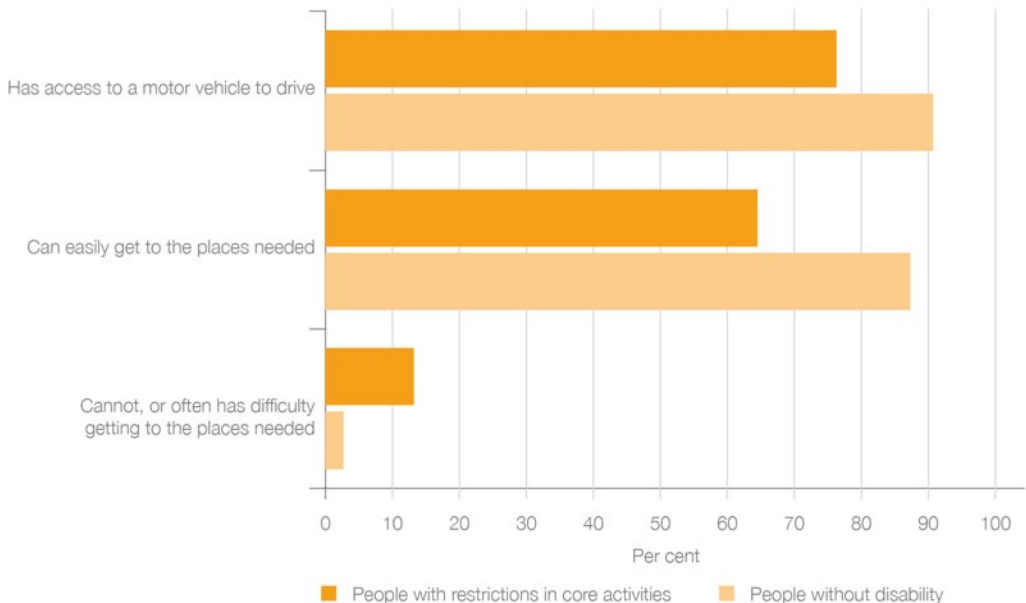
## Accessible transport

Better access to transport is vital in enabling people with disability, their families and their carers to overcome social exclusion and participate wholly in community life (Currie and Allen 2007). Figure 5-42 shows that people with restrictions in core activities have less access to available transport options and experience more difficulty getting around than people without disability. People with restrictions in core activities are nearly five times as likely to be unable to travel or have difficulty travelling.

Recognising that people with disability are more likely to experience poor health, lower levels of participation in education, social exclusion, lack of access to goods, services and facilities and ongoing discrimination (Council of Australian Governments 2011), the *National Disability Strategy 2010–2020* (p. 3) identifies ‘inclusive and accessible communities’ that include a ‘public, private and community transport system that is accessible for the whole community’ and the implementation of a ‘continuous accessible path of travel for people with disability’ as areas for future action.

Measures have been taken to reduce barriers for people with disability, such as the adoption of the *Disability Standards for Accessible Public Transport (Transport Standards) 2002*. The Transport Standards specify minimum public transport accessibility levels under the *Disability Discrimination Act 1992*, and set a timetable for compliance. However, a 2011 independent review of the Transport Standards has found that efforts to remove discrimination in transport accessibility have been uneven between urban and rural regions and different modes of public transport, including a lack of ‘whole of journey’ accessibility and a lack of confidence in the reliability of services that offer accessibility (The Allen Consulting Group 2009).

**Figure 5-42** Difficulty accessing transport, by disability status among people aged 18–64 years living in private dwellings, Australia, 2010



Source: Australian Government 2011b

## Use of motorised mobility aids

The Australian Competition and Consumer Commission (ACCC) and NRMA Motoring & Services are highlighting the need for more education on integrating mobility scooters into local communities. Survey results show scooter use is widespread across all age groups and people are using scooters to fill a variety of needs. The research survey conducted by the ACCC, CHOICE, EnableNSW, Flinders University, the NRMA and other mobility experts found that around 230,000 Australians use scooters, with more than half under the age of 60. The survey was a first of its kind in Australia and was funded by the NRMA to find out more about how mobility scooters were being used in local communities.

## Internet access and use

Enhancements in information technology and connectivity including the rollout of the National Broadband Network (NBN) are enabling individuals to interact more easily from their own home or other places through telecommuting and home-based work. This technology holds the potential for improved quality of life while reducing the need for motorised travel.

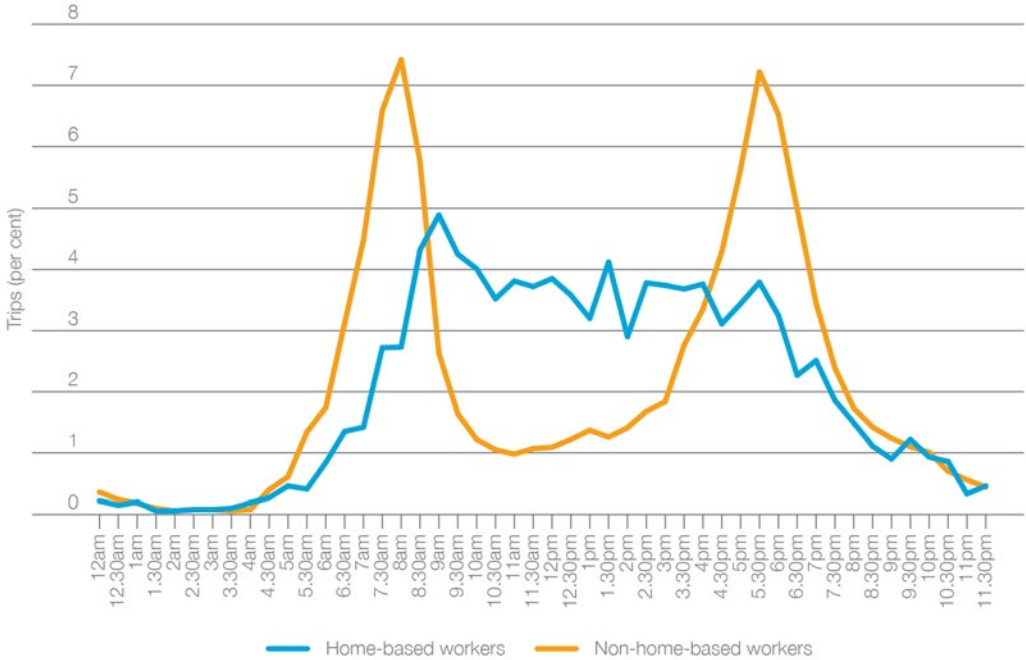
## Telecommuting and home-based work

Telecommuting – regularly or occasionally working from home or other places rather than a usual job location elsewhere – is growing in Australia. In Sydney research indicates that the proportion of workers who work from home on some days has nearly doubled from 3.8 per cent in 2001 to 7.5 per cent or 172,000 workers in 2009 (Corpuz 2011). Nationally approximately six per cent of the workforce telecommutes and the Australian Government has set a goal of at least doubling that rate by 2020 as part of its National Digital Economy Strategy (Department of Broadband, Communications and the Digital Economy 2011, p. 40). An IBM Australia study suggests that as much as a quarter of the Australian workforce – five million people – may be working at least partially from home by 2050 (IBM Australia 2012).

Home-based workers include those running businesses from their own home – they are distinguished from telecommuters by the absence of a usual job location elsewhere. Their home is their main place of work. In Sydney there are approximately 175,000 home-based workers. Unlike telecommuting, the proportion of home-based workers has remained relatively constant over the past decade (Shaz and Corpuz 2012).

Encouraging telecommuting and home-based work offers a relatively easy and low-cost option for reducing trips during peak periods, thereby easing congestion and associated environmental impacts in urban areas. It also offers flexibility and travel time savings, thereby contributing to wellbeing and liveability. An Australian Government study has estimated that the value of 10 per cent of workers telecommuting half of the time would be between \$1.4 billion and 1.9 billion annually (Australian Government 2010), including travel time and cost savings for employees, reduced emissions and congestion as a result of fewer trips during peak periods, reduced office space and utilities costs for employers, increased labour force participation and improved workforce retention.

Figure 5-43 Departure time period by work type, Sydney, 2010



Source: Shaz and Corpuz 2012

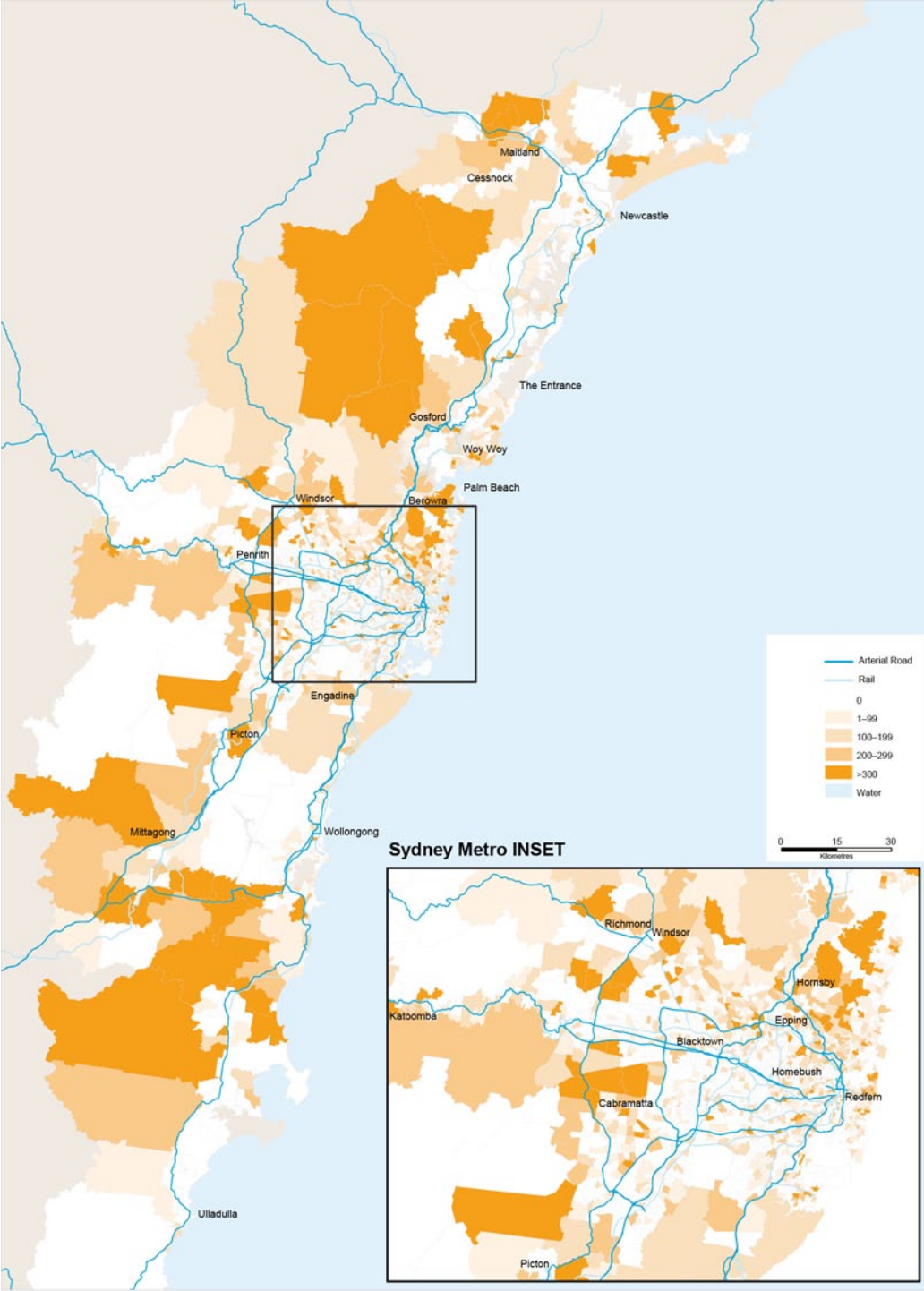
Analysis of the travel behaviour of home-based workers in Sydney by the NSW Bureau of Transport Statistics (Shaz and Corpuz 2012), depicted in Figure 5-43, found that, while home-based workers make fewer trips during peak periods and fewer public transport trips than regular commuters, they also make more trips during the inter-peak period. In Sydney, home-based workers make an equal number of total car trips and travel the same vehicle kilometres as those who travel from home to a workplace elsewhere (Shaz and Corpuz 2012). In other words, increases in home-based work and telecommuting do not necessarily lead to reductions in overall vehicle kilometres travelled on urban roads. Instead, they simply transfer travel from peak periods to non-peak periods which itself is good for reducing the peak pressures on urban transport networks.

Figure 5-44 shows the geographical distribution of home-based workers in the Greater Sydney region (Shaz and Corpuz 2012). Within the Sydney metropolitan area, higher numbers of home-based workers are found primarily in transport-poor travel zones in outer areas. Most telecommuters (Corpuz 2011) and approximately two in five home-based workers (Shaz and Corpuz 2012) are in professional occupations such as management, property and administration.

Connection to the NBN can also present an opportunity for regional and remote communities to overcome the 'tyranny of distance ... [and] ... reinvigorate regional centres' (IBM Australia 2012, p. 23). It can help individuals seek employment remotely, businesses to reach a wider pool of skilled workers and enhance the provision of health and aged care services in regional and remote communities (Department of Broadband, Communications and the Digital Economy 2010). As part of its efforts to encourage telecommuting in Australian communities, the Australian Government held the first National Telework Week in November 2012.



Figure 5-44      Distribution of home-based workers, Greater Sydney, 2010



Source: Shaz and Corpuz 2012

## Amenity

Amenity encompasses many features of cities that relate to how they are experienced and how they look and feel. As explained in the Australian Government's *Urban Design Protocol*, featured later in this chapter, the quality of neighbourhoods, towns and cities affects daily life, health and wellbeing. Quality urban design contributes to the economy, can help conserve and protect natural, Indigenous and built heritage, and contributes to the liveability of cities overall. It attracts people to visit, live and work in a location and can have a positive influence on physical and mental health by providing opportunities for better lifestyles and community interaction (Australian Government, 2011). Good quality urban design and open space are important to households living in both higher and lower density areas of cities. As the trend towards higher density development continues, the level of amenity will be of increasing importance.

### Urban design, residential density and public health

There is a growing body of evidence about the relationship between urban design, quality open space and the physical and mental health of the population. A recent review commissioned by the National Heart Foundation of Australia (Giles-Corti, Ryan and Forster 2012) considered the impact of urban density on a range of health outcomes including physical activity, cardiovascular and cancer mortality, road traffic mortality, respiratory health and mental health. It found evidence confirming the association between higher residential density and associated mixed land uses with easy access to public transport, shops and services and increased walking for transport purposes. However, it also found that there were some higher health risk factors with higher-density living, such as respiratory illnesses and mental health problems. This was attributed to continual exposure to noise, pollutants and crowding. It suggested that health risks of higher-density cities could be reduced through: good urban design, locating buildings and balconies away from busy roads and high-quality construction that limits noise transfer and maximises natural daylight and ventilation (Giles-Corti, Ryan and Forster 2012, pp 7–9).

The review found that public open space – parks, playgrounds and open space – and neighbourhood attractiveness is considered more important by people living in higher-density housing compared with other dwelling types because it substitutes for the lack of private outdoor space.

The positive health benefits of attractive neighbourhoods and public open space were attributed to a number of factors: increased levels of walking and physical activity, reduced mental fatigue and stress, social engagement and the development of social networks (Giles-Corti, Ryan and Forster 2012, p13).

The review highlighted that the needs of children and the elderly deserve special attention. For children, 'density (and, more broadly, living conditions) may affect child development, mental health and physical health, restricting their physical activity, independent mobility and active play', for older adults, 'mobility, perceived and actual safety, and opportunities for socialisation are key factors to consider' (Giles-Corti, Ryan and Forster 2012, p. 15). The report suggested medium to high density, in lower-rise development of three to five storeys, would appear to be optimal for families and older adults.

## OECD Compact Cities Policies

With a global population that is becoming increasingly urbanised, the Organisation for Economic Cooperation and Development (OECD) has been undertaking a number of projects in recent years to improve understanding of the role that cities can play in delivering policy responses to economic, environmental and social challenges.

Compact City Policies is one such project and was carried out between 2009 and 2011. The OECD defines a 'compact city' as a spatial form characterised by dense and proximate development patterns, urban areas linked by public transport systems, and accessibility to local services and jobs. The Compact City Policies project undertook a comparative assessment of the compact city experience across OECD member countries, using in-depth case studies of Melbourne (Australia), Vancouver (Canada), Paris (France), Toyama (Japan) and Portland (USA) to provide insights, highlight governance challenges and develop recommendations for effective compact city policies.

The report of the project *Compact City Policies: A Comparative Assessment* (OECD 2011) found that while this concept continues to generate concern – particularly relating to potential adverse impacts of higher densities – compact cities can deliver economic, environmental and social benefits by reducing car dependency and increasing the efficiency of infrastructure investment, protecting farmland and natural environments adjacent to urban areas, and giving communities better access to jobs and services.

The report found that a direct campaign by the City of Melbourne since 1985 effectively helped to create a vibrant, compact inner city. The residential stock in the City of Melbourne had increased from 800 to over 20,000 units in the central city by 2002, the number of bars, cafes and restaurants had more than doubled and vacancy rates in commercial buildings had halved.

In this report the OECD proposed a set of internationally comparable indicators to enable governments to monitor and evaluate the environmental, social and economic impact of compact city policies, and benchmark progress and establish future goals for compactness.

While recognising that each city faces different local circumstances, the report proposes a framework of key strategies for successful compact cities that recommends governments:

1. set a compact city vision with explicit goals
2. encourage dense development, particularly in greenfield areas where the urban structure can be influenced more quickly
3. retrofit existing built-up areas to accommodate more activities
4. enhance diversity and quality of life by creating lively and attractive urban centres
5. minimise potential adverse effects of compact cities – for example, by reducing traffic congestion, increasing supply of affordable housing and focussing on high-quality urban design.

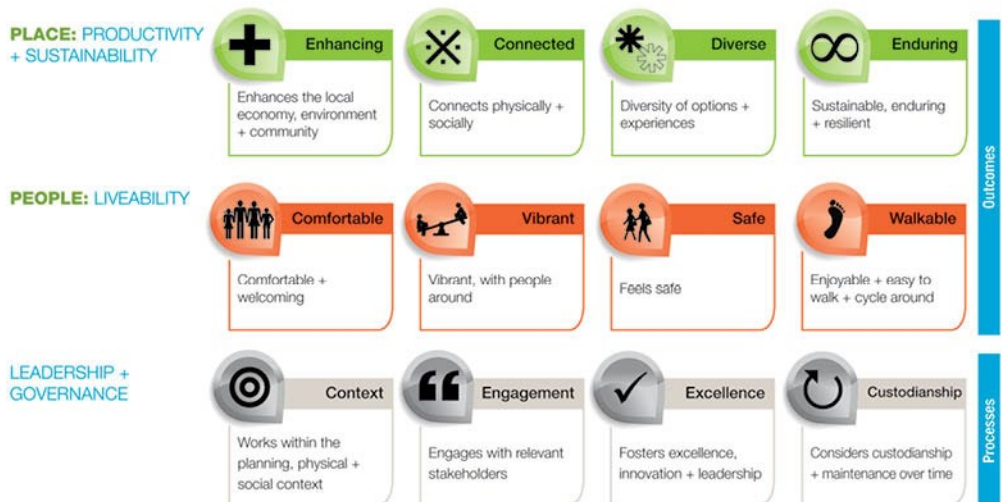
Population density maps of the major cities are shown in Appendix A of this report. They reveal how the larger cities of Sydney, Brisbane and Melbourne have higher densities concentrated in more than one locality, especially in Sydney.

## Creating Places for People – an urban design protocol for Australian cities



*Creating Places for People – an urban design protocol for Australian cities* is a web-based tool ([www.urbandesign.gov.au](http://www.urbandesign.gov.au)) that establishes 12 broadly agreed principles for quality urban places in the Australian context. It is intended that these principles be applied to any project or location – whether in a large capital city, regional centre or rural town. The aim is ‘to create productive, sustainable and liveable places for people through leadership and the integration of design excellence’. It recognises that urban design is both

a process and an outcome, with four principles about the processes used to create and maintain urban design projects and places; and eight principles about the characteristics or outcomes that urban design is aiming to achieve.



*Creating Places for People* is championed by over 40 organisations, including several Australian government agencies, state and territory governments, the Australian Local Government Association, the Council of Capital City Lord Mayors, the National Growth Areas Alliance, a number of local governments, the Planning Institute of Australia, the Australian Institute of Architects, the Australian Institute of Landscape Architects, the Green Building Council of Australia, the Australian Green Infrastructure Council, the Property Council of Australia, Consult Australia, the National Heart Foundation, the Water Services Association and a range of academic institutions and private organisations.

The principles of the protocol have been adopted into the Australian Green Infrastructure Council's Infrastructure Sustainability rating tool and the Green Building Council of Australia's Green Star – Communities rating tool. A number of state and local governments have also started to incorporate the protocol into their practices, guidelines and planning instruments. For more information see [www.urbandesign.gov.au](http://www.urbandesign.gov.au)

# Quality public space, recreational and cultural facilities

The quality of public spaces and cultural facilities contributes to the amenity experienced in cities. The aesthetic and cultural qualities of cities are difficult to measure because they are unique to each city, but they can show how attractive city spaces and facilities are to residents and visitors alike.

For example, international travel guide company Lonely Planet publishes an annual Best in Travel book, which promotes the top 10 destinations for travellers and tourists. In the top 10 cities featured in its *Best in Travel 2013* book, Hobart has been ranked seventh. The book describes Hobart as ‘a historic city reinventing itself’, shaking off its ‘sleepy reputation’. Noting that ‘Hobart’s allure has always been its natural beauty’, the book states that ‘the recent arrival of the world-class Museum of Old and New Art (MONA) has the waters rippling, hip tourists flocking and Hobart rousing from its slumber’ (Martin 2012).

Table 5-1            Lonely Planet’s Top 10 cities – Best in Travel 2012 and 2013

2012	2013
1. London, United Kingdom	1. San Francisco, USA
2. Muscat, Oman	2. Amsterdam, Netherlands
3. Bengaluru (Bangalore), India	3. Hyderabad, India
4. Cádiz, Spain	4. Derry/Londonderry, Northern Ireland
5. Stockholm, Sweden	5. Beijing, China
6. Guimarães, Portugal	6. Christchurch, New Zealand
7. Santiago, Chile	7. Hobart, Australia
8. Hong Kong	8. Montreal, Canada
9. Orlando, USA	9. Addis Ababa, Ethiopia
10. Darwin, Australia	10. Puerto Iguazaacú, Argentina

In a very different way, Darwin was rated 10th in the top 10 cities for 2012 based on qualities of urban design in the redeveloping Waterfront Precinct, with its wave pool, bars and wharf eateries, but also because of the intrinsic qualities of the Indigenous and culturally diverse communities (Lonely Planet 2012).

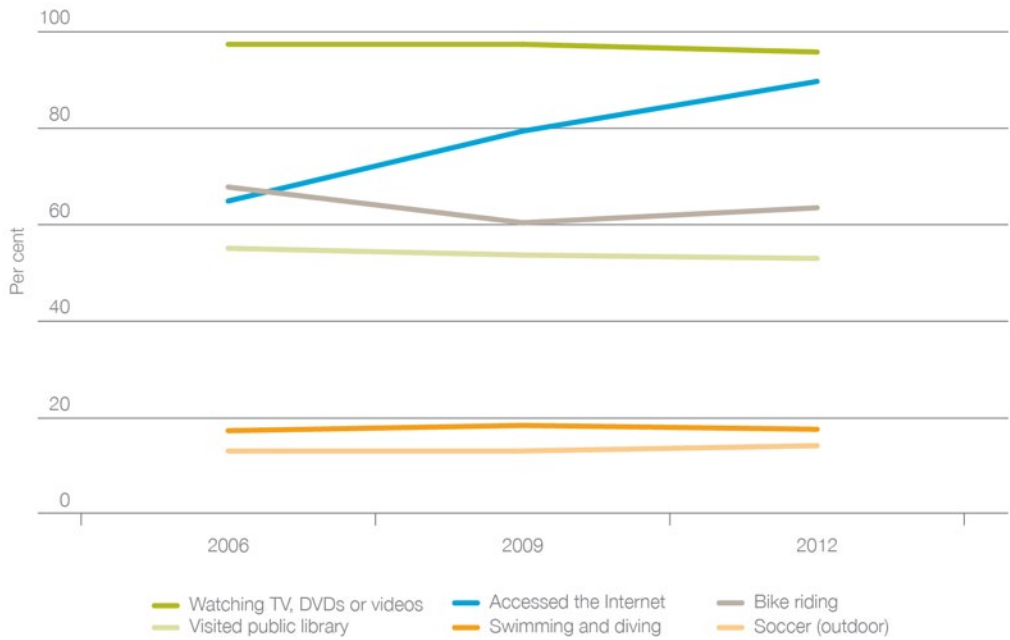
# Community wellbeing

One of the important connections between the amenity of places and community wellbeing is the quality of facilities for sporting, cultural and leisure activities. These include sporting facilities, public libraries, performance spaces and meeting facilities.

## Participation in sporting, cultural and leisure activities

A gauge of the social change that has been occurring among populations can be seen in activities of children and young people. Figure 5-45 shows the rapid uptake of internet use, while outdoor activities like swimming and soccer remain steady over the period 2006 to 2012. Notably bike riding for recreational activity is the most popular outdoor activity for children aged five to 14 years, with more than 60 per cent of children bike riding for leisure.

Figure 5-45 Children aged five to 14 years participation in sporting, cultural and leisure activities, 2006, 2009, 2012



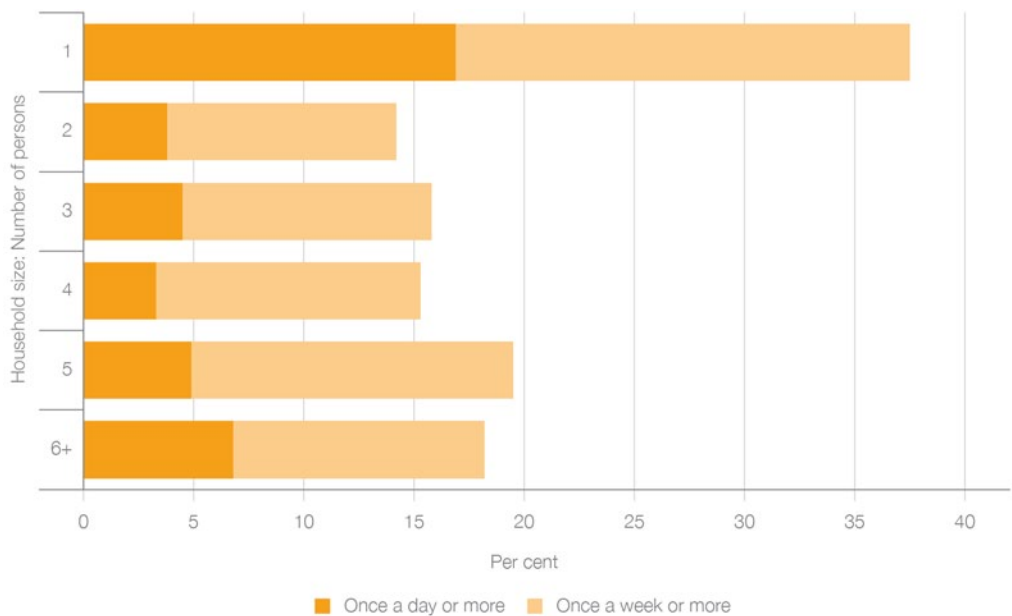
Source: ABS 2012c

# Social capital

Organised sporting and cultural activities are one way of building trust within communities. Many other opportunities exist for incidental social interaction in streets, neighbourhoods and public spaces that can add to the social capital within communities. Social capital is often defined as being a resource available to individuals and communities founded on networks of mutual support, reciprocity and trust. The recent Grattan Institute report *Social Cities* (Kelly et al. 2012a) discusses how urban environments can help or hinder people to make and maintain ‘meaningful, positive social interactions’ with others. Social connection is central to concepts of wellbeing, happiness and quality of life. Its absence – loneliness – is associated with poor physical and mental health. Having and maintaining good social relationships with friends and family is usually more important to people than increased income. Supportive social connections with neighbours and other people can make communities more dynamic and resilient.

Some groups are likely to have fewer social connections including one-person households, sole parents and older people (Figure 5-46). With the number and proportion of one-person households growing most rapidly, the report argues that there is a need to understand better how cities can enable or inhibit social connection.

Figure 5-46      Frequency of loneliness by household size, 2009



Source: Kelly et al. 2012a



The report argues, in broad terms, that cities that are compact and well-designed with quality spaces for leisure and recreation – like parks, libraries, shops and meeting places – and that are well connected to transport and services can help people better maintain their social connections. Organised community events and activities – like community gardens, free public entertainment and cultural initiatives such as reading groups at public libraries, can all help people be better connected. In Cairns for example, a Regional Council initiative, the ‘Active Living’ program provides free daily exercise classes in the park.

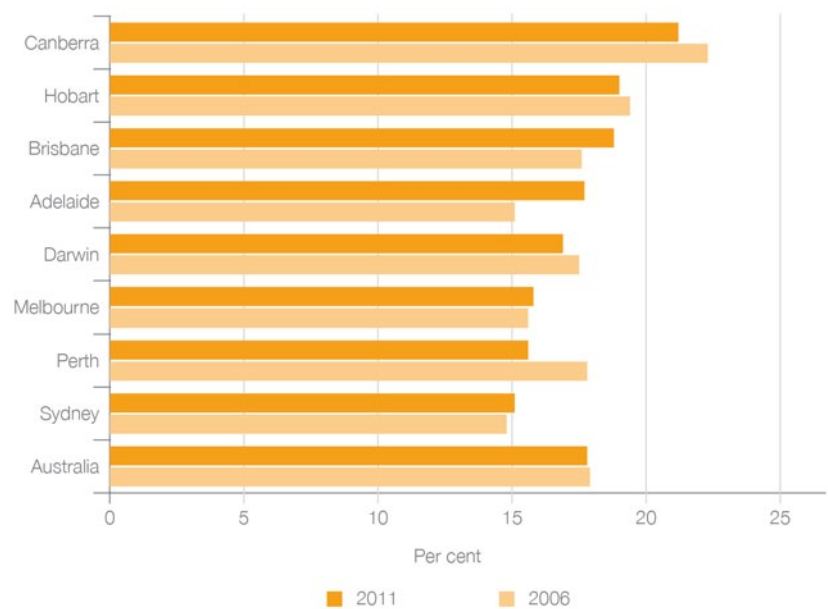
*Active Living program Free Exercise in the park, Cairns, Queensland.*  
Photo courtesy of Sara Stace



# Volunteering

An important measure of social capital within communities is the proportion of the population that does voluntary work for community organisations or groups. In *State of Australian Cities 2011*, volunteer rates for capital cities were reported from the 2006 Census, which showed Canberra as the capital city with the highest rates of volunteering (Kelly et al. 2012a). The 2011 Census shows that Canberra remains the highest volunteering capital city of Australia as illustrated in Figure 5-47.

Figure 5-47      Volunteers aged 15 years and over as a proportion of the total population in capital cities, 2006 and 2011



Source: ABS 2012e



Willing helpers, Hobart, Tasmania Australia.  
Photo courtesy of Hobart City Council

### Volunteering for the ‘not-for-profit sector’

Australia’s not-for-profit sector is large and diverse and plays an important role in building productive and inclusive communities. It helps to enrich communities culturally, socially, economically and environmentally and most importantly provides support to the most vulnerable and disadvantaged groups in communities. In this way the not-for-profit sector contributes to wellbeing, social inclusion and employment.

A study of the contribution of the not-for-profit sector by the Productivity Commission (2010) found that there are an estimated 600,000 entities in the sector which contribute around \$43 billion to the economy of Australia, making it larger than the communications industry, agriculture or tourism. The majority of these are small, unincorporated neighbourhood groups or associations. These entities provide around eight per cent of employment in Australia (around 900,000 people) and make up over four per cent of GDP. Additionally, over 6 million Australians volunteer for these organisations each year.

In recognition of the work of the not-for-profit sector, the Australian Government has developed a National Compact – *Working together* – which sets out a shared vision on how the Australian Government and the sector will work together based on mutual respect and trust. The Compact is a joint commitment by the Government and the sector to build on the strengths of individuals and communities to improve social, cultural, civic, economic and environmental outcomes. For more information see [www.nationalcompact.gov.au](http://www.nationalcompact.gov.au)

## Conclusion

The liveability of Australia’s major cities is high relative to many cities around the world. When considered in relation to sustainability; however, Australian cities have some room for improvement. As the populations in Australian cities are set to grow, the structure of the cities will need to become more dense and compact. Climate change and economic restructuring will in turn transform life in cities. In the context of the fundamental changes underway in cities, close attention to indicators of liveability such as equality, health, safety, affordability, accessibility, amenity and community wellbeing will help to monitor quality of life and social inclusion for Australia’s diverse urban communities.

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The 2010 and 2011 *State of Australian Cities* referred to governance as the political and legal structures and mechanisms used to manage and coordinate our urban systems. They also refer to how these structures and mechanisms interrelate with each other and with key stakeholders, how resources are allocated and how outcomes are achieved.

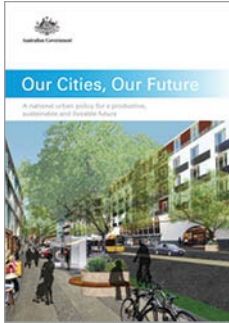
While there are many tools and strategies available to the managers of our cities, it must be backed by sound and decisive governance to allow cities to become more productive, sustainable and liveable.

This chapter provides updates on changes that have occurred since the 2011 report, and highlights progress on the Commonwealth's implementation of the National Urban Policy and the Council of Australian Governments cities agenda.

### Key findings

- Implementation of the National Urban Policy is well underway as summarised in Appendix B.
- The Council of Australian Governments (COAG) Reform Council provided COAG with its *Review of capital city strategic planning systems* in December 2011 and the report was publicly released in April 2012. It found that while jurisdictions made considerable efforts to improve their strategic planning systems, no jurisdiction was found to be wholly consistent with the nine nationally agreed criteria. It highlighted the need for ongoing targeted and agreed intergovernmental co-operation on cities issues to help all levels of government get effective strategic planning systems in place.
- In its response to the report, COAG agreed to continued intergovernmental collaboration and that further work on cities would be taken forward by the COAG Standing Council on Transport and Infrastructure (SCOTI).
- The 2012–2013 Federal Budget was accompanied by a framework for the second phase of the Nation Building Program (NB2) which will run from 2014 to 2019 and help deliver on the goals and objectives of the National Urban Policy.
- An Infrastructure Finance and Funding Reform report prepared by the Infrastructure and Finance Working Group was released in June 2012. It stressed the importance of improved planning, a deeper pipeline of projects and funding reform.
- In June 2012 the Productivity Commission released the first national study of the regulatory role of local government. Its key message from the study is that implementing and enforcing state laws, rather than local laws, is dominating regulatory workloads of local government.

## National Urban Policy Implementation



In May 2011 the Australian Government released *Our Cities, Our Future – a national urban policy for a productive, sustainable and liveable future*.

The National Urban Policy contains a set of initiatives for achieving the productivity, sustainability and liveability goals set out in the National Urban Policy Summary Action Plan (Chapter 7).

The Action Plan includes initiatives to be implemented across portfolios over the short, medium and long term. A report on the progress of these initiatives is included in Appendix B.

## COAG Cities Agenda

### COAG Reform Council *Review of capital city strategic planning systems*

After a request by Coalition of Australian Governments (COAG) in December 2009, the COAG Reform Council (CRC) undertook a comprehensive review of State and Territory capital city strategic planning systems based on nine agreed criteria (see Table 6-1). Following extensive consultations with each jurisdiction the CRC, assisted by an Expert Advisory Panel reported to COAG in December 2011 and publicly released the final report on 2 April 2012.

The CRC report found that all jurisdictions had made considerable effort to participate in the review process and improve their strategic planning systems. The report also found that in dealing with the future of their cities jurisdictions shared a number of common goals, issues and challenges. For example, all jurisdictions were focussed on improving integration both within and between governments.

The report suggests three key areas for further development:

- Improving freight transport and intermodal networks to support forecast port and airport capacity and growth in the freight task.
- Putting more emphasis on public transport to combat congestion and address social inclusion by integrating transport planning with land use decisions.
- Improving project and cost-benefit analysis frameworks so they take better account of externalities and do not unduly discount future benefits.

It was found that nationally significant policy issues including demographic change, housing affordability and social inclusion (Criterion 4, see Table 6-1), presented shared challenges for all governments, albeit requiring different policy responses for each city's differing circumstances.

While no jurisdiction was found to be wholly consistent with the nine nationally agreed criteria, the report applied four ratings rather than simply 'consistent' or 'not consistent', to indicate the level of need for further improvements to the way jurisdictions plan and invest in capital cities. Thus the report highlights possible future areas of focus for all jurisdictions and provides useful information for governments to consider when developing future reform initiatives within their jurisdiction.

The CRC report clearly noted that the findings reflected the status of strategic planning systems during the review period only and that they could not be used as an indicator of the future performance of a strategic planning system. Given the different nature of the circumstances facing individual capital cities, the report should not be used to compare jurisdictions.

The CRC also found examples of best practice consistent with the national criteria and encouraged governments to continue to share such examples to support ongoing national improvement.

*Adelaide.*



Table 6-1 Findings of the COAG Reform Council Review of capital city strategic planning systems

Criterion	Sydney	Melbourne	South East Queensland	Perth	Adelaide	Hobart	Canberra	Darwin
1. Integration	Partially consistent – reform pending	Partially consistent	Largely consistent	Largely consistent	Consistent	Partially consistent – reform pending	Largely consistent	Partially consistent – reform pending
2. Hierarchy of plans	Partially consistent	Partially consistent	Consistent	Consistent	Consistent	Partially consistent – reform pending	Consistent	Largely consistent
3. Nationally-significant economic infrastructure	Partially consistent	Partially consistent	Largely consistent	Largely consistent	Consistent	Largely consistent	Consistent	Largely consistent
4. Nationally-significant policy issues	Largely consistent	Partially consistent	Largely consistent	Partially consistent	Largely consistent	Partially consistent	Largely consistent	Partially consistent
5. Capital city networks and regional, domestic and international connections	Largely consistent	Largely consistent	Consistent	Partially consistent	Consistent	Consistent	Consistent	Consistent
6. Planning for future growth	Consistent	Largely consistent	Consistent	Partially consistent – reform pending	Consistent	Partially consistent – reform pending	Consistent	Largely consistent
7. Investment and priorities frameworks	Partially consistent	Partially consistent	Partially consistent	Partially consistent	Largely consistent	Partially consistent	Partially consistent	Partially consistent
8. Urban design and architecture	Largely consistent	Largely consistent	Partially consistent	Partially consistent	Consistent	Partially consistent – reform pending	Largely consistent	Partially consistent

Continued



Criterion	Sydney	Melbourne	South East Queensland	Perth	Adelaide	Hobart	Canberra	Darwin
9. a) accountabilities, timetables and appropriate performance measures	Not consistent – reform pending	Not consistent	Partially consistent	Partially consistent	Consistent	Partially consistent – reform pending	Partially consistent	Partially consistent – reform pending
b) intergovernmental co-ordination	Partially consistent	Largely consistent	Consistent	Partially consistent	Consistent	Largely consistent	Largely consistent	Largely consistent
c) evaluation and review cycles	Partially consistent	Partially consistent	Consistent	Partially consistent – reform pending	Consistent	Not consistent – reform pending	Largely consistent	Partially consistent
d) consultation and engagement	Partially consistent	Partially consistent	Partially consistent	Partially consistent	Consistent	Partially consistent	Consistent	Largely consistent

<b>Consistent</b>	The self-assessment indicated consistency of the strategic planning system with key attributes of the criterion and this was supported by a strong rationale and evidence.
<b>Largely consistent</b>	Most key attributes of consistency with the criterion were shown in the self-assessment and were supported by evidence. One or two relatively minor attributes were not clearly indicated or not fully explained, with the council confident that a process is in place to develop the missing attribute.
<b>Partially consistent</b>	Most key attributes of consistency with the criterion were shown in the self-assessment and were supported by evidence. One or two more significant attributes were not clearly indicated or not fully explained.
<b>Not consistent</b>	Key attributes of consistency were not shown in the self-assessment but the system is substantially in transition to a new system that may be consistent.

## The role of the Commonwealth

The CRC did not formally review the Commonwealth against the national criteria. However, the CRC observed that Commonwealth policies are important to the future of capital cities and have considerable impact on strategic planning systems. In particular, the report recognised the Commonwealth's heightened engagement in urban issues through the release of the National Urban Policy in May 2011.

It highlighted the need for targeted and agreed intergovernmental co-operation to help all levels of government build better strategic planning systems.

It was further noted that the Commonwealth should guide nationally significant policy issues that have an impact on State and Territory strategic planning systems. There is also a role for the Commonwealth in supporting national data collection to help improve the knowledge gap in cities research. In addition, an ongoing dialogue about future challenges facing cities and best-practice knowledge sharing would support continuous national improvement in city strategic planning.

## Response from COAG

COAG considered the CRC report at its meeting of 13 April 2012. The *Communiqué* from the meeting stated that the effective organisation and planning of cities is vital for sustainable growth, increased productivity and wellbeing. It also noted the continuing commitment of each government to improving the administration and planning for sustainable cities.

COAG agreed to continue intergovernmental collaboration and that further work on cities would be taken forward by the COAG Standing Council on Transport and Infrastructure (SCOTI).

*Geelong waterfront.*

Image courtesy of City of Geelong



## Nation Building Program

The Nation Building Program is the Government's signature land transport infrastructure investment program. The current Nation Building Program, which runs from 2008–09 through to 2013–14, will deliver approximately \$36 billion of land transport infrastructure, ranging from major road and rail construction projects through to many smaller-scale local road projects.

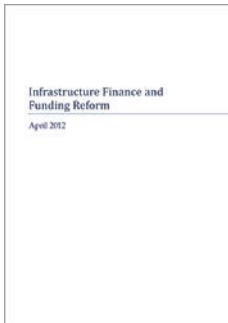
The second phase of the Nation Building Program (NB2) is due to commence from 1 July 2014 and will run for five years through to 30 June 2019.

The broad framework for NB2 was announced in the context of the 2012–13 Federal Budget. The overarching objective of NB2 is to 'lift Australia's productivity through nationally significant land transport infrastructure'. The structure of the program is outlined in Figure 6-1. The program will be an important mechanism to further deliver on the goals and objectives of the National Urban Policy.

Figure 6-1 Framework for the Nation Building 2 Program

Moving Freight		
To support economic growth through efficient and connecting freight networks		
<b>Interstate Freight</b> To enhance productivity of freight networks across the country	<b>Local Freight</b> To improve freight connections within cities and regions and improve access to ports	<b>Heavy Vehicle and Rail Freight Productivity</b> To improve efficiency and capacity of supply chains
Connecting People		
To encourage reliable and efficient land transport to connect people across the nation		
<b>Connecting Cities</b> To improve connectivity between cities and major productivity centres	<b>Urban Living</b> To enhance urban liveability and access to essential services	<b>Pinch Points</b> To increase capacity and efficiency and reduce congestion in urban areas
Safety		
To improve the safety and sustainability of our national road and rail networks		
<b>Black Spot</b> To reduce the social and economic cost of crashes	<b>Roads to Recovery</b> To repair and upgrade local roads to improve safety and access to services in communities	<b>Network Regeneration</b> To upgrade, improve and maintain national road and rail networks
Innovation		
To enhance, plan for and develop current and future land transport networks		
<b>Smart Infrastructure</b> To optimise the use of urban land transport infrastructure through the provision of intelligent transport systems	<b>Planning and Research</b> To research and plan for the development of the future land transport network	<b>Evaluation and Compliance</b> To ensure program objectives are met and value for money is achieved

## Infrastructure Finance Working Group Paper – Infrastructure Finance and Funding Reform



Over the six years to 2013–14, the Australian Government committed \$36 billion to Australia's transport infrastructure under the Nation Building Program. However, with our major cities experiencing the pressures of population growth and increasing urbanisation, our future infrastructure needs are significant.

In June 2012, the Government released the report of the Infrastructure Finance Working Group (IFWG) titled *Infrastructure Finance and Funding Reform*. The IFWG was asked to find ways of improving the capacity of governments and the private sector to invest in infrastructure projects.

The paper discusses the need for productive infrastructure to be seen as 'an investment in our future, rather than a cost' because it contributes to wealth generation, quality of life and curbing congestion.

The IFWG calls for a three-pronged approach:

- major reform of infrastructure funding
- improved infrastructure planning to endow a deeper pipeline of projects giving industry certainty
- steps to develop more flexible, efficient markets to attract private investment.

The report concludes that governments can begin clearing the backlog of infrastructure investment by reforming their funding capacities through the increased use of measures such as user pays infrastructure and recycling capital from brownfield assets.

The monetisation of brownfield assets was explored in some detail as a potential option for freeing up substantial capital for state and territory governments while providing an attractive private sector investment. A longer-term infrastructure investment strategy across all jurisdictions was advocated, with reductions in procurement costs and a deeper, more competitive capital market to attract investment, particularly from superannuation firms.

Related issues identified by the IFWG were:

- Better long-term planning of infrastructure to identify a pipeline of priority infrastructure projects. In part this has been achieved by the launch in May 2012 of the *National Infrastructure Construction Schedule* (NICS) which was developed by the Department of Infrastructure and Transport in collaboration with the states, territories and local governments
- There is a need for more flexible government funding assistance to help project proponents during the start-up phase
- Government structural reforms at the project level could be used to encourage private sector funding. This could involve taking a more flexible approach in mitigating project risk through to more efficient bid processes.

## Productivity Commission – Role of local government as regulator



In June 2012 the Productivity Commission released its study of the regulatory role of local government. The study had a particular focus on those local government responsibilities which affect business costs.

Good local government is integral to the performance of our major cities. Local government is not only responsible for development and planning approvals, it also provides a vast range of health, environment and community services. Local government also provides the opportunity for citizens to be directly engaged in the process of governing their cities.

The Productivity Commission's study notes that the Commonwealth and state and territory governments are increasingly recognising the potential of using local government to achieve their policy objectives at the local level. This is borne out by the growth in compliance, monitoring and enforcement activities local governments carry out on behalf of state and territory governments. However, the key message from the study is that this is dominating regulatory workloads of local government.

Burdens on business arise from delays, information requirements, restrictions on approvals, fees and penalties. Local governments can also prevent a business from operating or realising opportunities. Building, planning and land-use regulations impose the largest burdens on business.

The study notes that there has been significant growth in the regulatory responsibilities of local government and that many of these responsibilities have been delegated by state and territory governments. It was further noted that over the last 25 years, local government legislation has changed, with the exception of NSW, to provide local governments with greater autonomy, flexibility and discretion to implement policy for their local communities, while being subject to greater public accountability.

This has led to local governments being caught in a tug-of-war between strongly expressed local preferences and the management of tasks delegated to them by their state governments.

Managing responsibilities delegated by state and territory governments to local government has been made more difficult in many cases through:

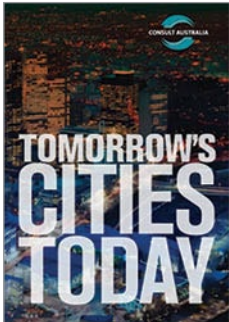
- Insufficient consideration of local governments' capacity to administer and enforce regulation before a new regulatory role is delegated to them
- Limited guidance and training on how to administer and enforce regulations
- No clear indication and ranking of state regulatory priorities.

With regards to the Commonwealth's role, the Australian Constitution provides very limited capacity for the Commonwealth Parliament to make laws with respect to local government. However, the Commonwealth can influence the regulatory responsibilities of local government and the way they are implemented via national frameworks or intergovernmental agreements.

Some of these national frameworks and intergovernmental agreements are competition policy, environment, water, coastal management, transport, food safety, building and plumbing codes, road rules, heavy vehicles, inter-governmental relations on local government matters, and the National Partnership Agreement to Deliver a Seamless National Economy.

## Stakeholder reports on cities

### Tomorrow's Cities Today



*Tomorrow's Cities Today* was released by Consult Australia in December 2011. Consult Australia is an industry association for professional services firms within the built and natural environment.

Consult Australia welcomed the work undertaken by the Australian Government and COAG in shifting the issue of cities from local and state interests to a debate of national importance. The report contends that it is now time to build on the broad framework of the National Urban Policy and outlines sixteen recommendations for governments at all levels to deliver more productive, sustainable, liveable and better governed cities.

*Tomorrow's Cities Today* observes that bold leadership is required to foster greater consistency and alignment across the policy and planning initiatives affecting our built environment. It notes that strategic criteria-based planning for capital cities must be introduced so that 'success' can be measured. Moreover a long term approach to the prioritisation of infrastructure delivery is essential at all levels of government. The report argues that this will not be achieved without a sustainable funding stream.

The report recognises that local government performs a vital role in Australia's system of governance delivering an increasing range of services across portfolios through its ability to rapidly deploy funds for new infrastructure and community needs.

The report also urges governments to pay closer attention to the impact that the built environment (encompassing active and public transport infrastructure) can have in combatting social disadvantage and in managing the ageing population. It urges that the built environment be included in the Australian Government's Social Inclusion Agenda.

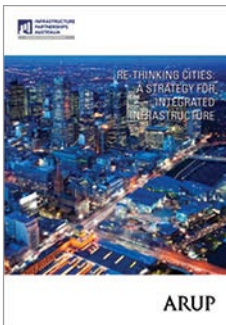
Recommendations in *Tomorrow's Cities Today* for harnessing and achieving good governance include:

- That COAG agree that all jurisdictions have in place plans in the near term that meet the COAG criteria for future strategic planning for all cities with populations over 100,000 or that are likely to reach 100,000 by 2050
- That all governments link future infrastructure funding decisions towards helping cities meet these criteria
- That cities should undergo reviews against these criteria which will be integrated into annual reporting and audits of performance
- That a Productivity Commission review of what constitutes best-practice in local government should be conducted across Australia's major cities, with reference to a city's

ability to reach the goals of the National Urban Policy, the Sustainable Population Strategy and those set out in the COAG objectives

- That the outcomes of this review should be incorporated into a revised COAG Cities Criteria and explicitly linked to Commonwealth funding agreements
- The formation of a bi-partisan Public Infrastructure Investment Strategy with which to determine the merits of (possibly debt-leveraged) government investment in infrastructure projects
- The application of broader cost-benefit analyses that capture the wider, longer-term economic and social benefits associated with public investment in infrastructure
- Committing to undertaking pilot studies of new road pricing mechanisms including road-user charges.

## Rethinking Cities: A strategy for integrated infrastructure



*Rethinking Cities: A strategy for integrated infrastructure* was released by Infrastructure Partnerships Australia (IPA) in July 2012.

IPA is a peak infrastructure body with membership drawn from both the private and public sectors.

*Rethinking Cities* outlines the importance of infrastructure to Australia's cities and to national productivity. It concludes that there are significant challenges facing infrastructure provision in Australia and a failure to deal with them will seriously compromise our global competitiveness.

The report focuses on four key infrastructure areas – energy, water, waste and transport – and outlines an agenda for addressing these areas to realise productivity and liveability gains, and meet sustainability outcomes.

The report presents five key recommendations:

- Governments should build on the current cities agenda by encouraging further governance reforms that achieve 'seamless' integration between jurisdictions on land-use, development assessment and infrastructure planning. To this end it is recommended that all jurisdictions bring planning and transport functions under a single agency. Moreover, there should be increased collaborations between jurisdictions
- Jurisdictions should be regularly assessed against transparent and measurable benchmarks. Benchmarks should be aimed both at sectors (i.e. transport, water, electricity, waste) and citywide (i.e. liveability, sustainability)
- In responding to the need for more water, waste, energy and transport infrastructure, jurisdictions should consider pricing models, such as time of day tolling and electricity smart meters as a way to manage demand
- All jurisdictions must bring greater contestability/competition to the supply and management of infrastructure
- All jurisdictions must ensure a streamlined, transparent and innovative procurement framework.



## Metropolitan planning and governance in states and territories

### New South Wales



New South Wales is characterised by a relatively high number of local authorities (152) rather than larger regional governments. In parts of the State, cooperative regional governance structures have emerged with shires and cities forming regional cooperative organisations called Regional Organisations of Councils. For example, the Western Sydney Regional Organisation of Councils, represents 10 councils across Western Sydney.

A system of sub-regional strategies, which applies in the Sydney metropolitan area, allows groups of councils to undertake long-term cooperative strategic planning, negotiating housing and employment distribution across boundaries in collaboration with the State government.

The New South Wales Government has overall responsibility for long-term policy priorities and for delivering investment consistent with its policy objectives. Decision-making at the State or city level is soon to occur through the *Metropolitan Strategy for Sydney* and *NSW Long Term Transport Master Plan* (both documents are currently being prepared). At a municipal level, councils are responsible for local strategic and statutory planning, in alignment with overall metropolitan and subregional strategies, and for delivery of local infrastructure and other services.

While local government has principal responsibility for initiating local land-use policy changes and determining development applications, the State government reserves the power to endorse or reject local land-use plans and to call in proposals for the planning minister's assessment and determination.

The New South Wales Government has a Metropolitan Development Program which seeks to monitor and prioritise land release and associated infrastructure delivery in metropolitan Sydney and the Central Coast. Similar programs operate elsewhere, such as the Lower Hunter and the Illawarra. As well as coordinating greenfield planning, these programs coordinate forecasts and planning for housing growth in infill areas.

The Government has an Employment Lands Development Program, which aims to monitor take-up and manage the supply of employment land and the co-ordination of associated infrastructure in metropolitan Sydney and the Central Coast.

*NSW 2021* provides a 10-year delivery plan for aligning policy and implementation efforts of State government agencies across all portfolios. Metropolitan and regional planning strategies must contribute to the delivery of the specific objectives and targets set out in *NSW 2021*.

The State government will soon finalise a long-term State Infrastructure Strategy which provides a clearer and more certain 'pipeline' of infrastructure projects over the next 20 years, supporting state objectives for economic and productivity growth. Infrastructure New South Wales has presented its independent report to the Government for consideration

and, once finalised, the agreed infrastructure priorities will be aligned with other metropolitan and regional strategic objectives.

The New South Wales planning system is currently under review; a Green Paper outlines the key focus of the reforms with a White Paper to follow soon. Reforms proposed include a stronger role for strategic planning by giving statutory recognition to strategic plans at the regional, subregional and local levels. The reforms also propose to strengthen governance structures at the state and regional level to ensure strategic plans are implemented.

## Metropolitan planning

Sydney has long benefited from having a metropolitan strategic plan. The first major strategic plan, the *County of Cumberland Plan*, was prepared in 1948. Since then, major strategic plans have been prepared in 1968, 1988, 1995, 2005 and 2010.

The current metropolitan strategy, the *Metropolitan Plan for Sydney*, was released in 2010 after a comprehensive review of the 2005 strategy. A new Metropolitan Strategy is currently being prepared to align with *NSW 2021* as well as new transport and infrastructure priorities.

The *NSW Long Term Transport Master Plan* is a comprehensive and integrated strategy for all modes of transport across New South Wales and is now being finalised. It will address the key challenges of population growth, job creation and the need for a freight and public transport network that maximises benefits to the economy. It will align with strategic land use planning in the State, in particular the new Metropolitan Strategy for Sydney.

These plans aim to carefully manage the expansion of residential and commercial development across Sydney and New South Wales to ensure cities, towns, suburbs and neighbourhoods retain their amenity and liveability.

A key aspect of planning in New South Wales is the active development of the transport system in a way that supports the hierarchy of metropolitan, strategic and regional centres.

Planning strategies exist for the other major New South Wales cities including:

- Newcastle – through the Lower Hunter Regional Strategy
- Wollongong – through the Illawarra Regional Strategy
- Tweed Heads – through the Far North Coast Regional Strategy
- Queanbeyan – through the Sydney-Canberra Corridor Regional Strategy.

These and other Regional Strategies are key policy documents scheduled to be reviewed every five years. A current systematic review is underway.

Following completion of the *NSW Long Term Transport Master Plan*, work will begin on detailed Regional Transport Plans. These will be linked to Regional Strategies, supporting new development in areas with existing or planned transport capacity, identifying important future corridors and protecting existing corridors from incompatible adjacent development.

New South Wales strategic planning documents articulate long-term approaches for urban development, infrastructure planning and environmental protection. They are currently given statutory weight under Section 117 of the *Environmental Planning and Assessment Act 1979* (New South Wales), to ensure implementation through local land use plans.

## Victoria



Victoria's strategic approach to land use and transport planning sits within the government's broader strategic and policy framework. All departments and agencies must take this into account in their budget, asset and service planning.

The Victorian Government has an overall leadership role in establishing long-term policy priorities and in delivering investment consistent with its policy objectives. It works in partnership with local government in planning across the state. Decision-making at the State or city level provides for the strategic planning framework, long-term directions, high level investment strategies and co-ordination of service and infrastructure delivery.

Local councils are responsible for municipal-level strategic and statutory planning within the overall metropolitan or regional context, and for delivery of a range of infrastructure and other services. During the 1990s, structural reforms were undertaken in Victoria to make local government and urban planning and development frameworks more responsive to changing market and community needs. This included reducing the number of councils from 219 to 79 to achieve better economies of scale. At the same time, councils were encouraged to take responsibility for local economic development.

More recently, the Victorian Government established the Growth Areas Authority (GAA) to integrate infrastructure planning for growth areas in the metropolitan region. The GAA has the role of developing whole-of-government policy positions in the growth areas of Casey-Cardinia, Hume, Melton-Caroline Springs, Whittlesea and Wyndham. The authority works with local councils to facilitate land development.

Strong population growth in provincial Victoria is set to continue. It is mostly concentrated around regional cities, coastal areas and places within commuting distance of Melbourne. As a result, strategic planning for Melbourne has been complemented by a State-wide blueprint to accommodate population growth in provincial Victoria.

*Victoria in Future* (VIF) contains official government projections for population, age structure and the number of households for all local government areas and statistical local areas across the State. It is used for strategic and service planning and has been published regularly since 1995.

The *Urban Development Program* (UDP) further contributes to Victoria's planning. It is reviewed annually and is in its seventh year. Its primary objective is to provide accurate and up-to-date information to local councils, infrastructure and service providers and developers to help ensure an ongoing provision of land and supporting infrastructure for future residential and industrial requirements.

## Metropolitan planning

Melbourne has enjoyed metropolitan strategic planning since 1927 when the Metropolitan Town Planning Commission was established. Planning strategies for Melbourne have been produced from time to time, notably through the first comprehensive planning scheme for the metropolitan area in 1954. In 1971 the principles of growth corridors, green wedges and containing outward growth were introduced. In 1983 new district centre zones were created

to encourage office development in 14 centres and restrict it elsewhere. In 1995 much of metropolitan wide planning direction and controls were devolved to local government.

In 2002 the Victorian Government released *Melbourne 2030 – planning for sustainable growth* as a whole-of-government endorsed strategic planning framework for metropolitan Melbourne and its relationship with regional Victoria.

The Victorian Government has established an Urban Growth Boundary to set limits on metropolitan Melbourne's outward growth that can only be altered by Parliament. This boundary was expanded following the release of the *Melbourne @ 5 million* plan to accommodate faster than expected population growth. This strategy was developed in conjunction with the *Victorian Transport Plan* (VTP) which integrates new commitments for public and private transport, long term land supply for employment and residential growth, as well as implementing a strategic approach to managing environmental impacts.

Regional growth plans are being developed to provide broad direction for land use and development across regional Victoria and key regional centres. Eight regional growth plans will generally be completed by late 2013. They include the regional major city of Geelong through the G21 – Geelong Region Alliance.

A new metropolitan planning strategy is being prepared to ensure the valued aspects of Melbourne are protected while allowing for future needs. The strategy will include links with the Regional Growth Plans and together these plans will provide a long-term vision for Victoria including housing choice, transport accessibility, economic growth, environmental protection, infrastructure, community facilities and services. A Ministerial Advisory Committee has been established to guide the development of the metropolitan planning strategy. The Ministerial Advisory Committee with the Department of Planning and Community Development has developed nine strategic principles to guide the preparation of the strategy.

The *Planning and Environment Act 1987* (Vic) provides the legislative authority for the Victoria Planning Provisions including a State Planning Policy Framework and Local Planning Policy Frameworks tailored to each municipality. The policy frameworks call for development proposals to be assessed against policy objectives. The planning system is supported by performance monitoring and the progressive rollout of electronic data systems, including online planning scheme maps and electronic development assessment.

The *Planning and Environment Act 1987*, the State Planning Policy Framework and other related provisions are under review to simplify current laws, remove redundant provisions, and strengthen certainty and timeliness.

Victoria has progressively modernised its transport legislation. The *Transport Integration Act 2010*, the new principal transport statute, sets out a vision, objectives and principles for transport, making it clear that the transport system needs to be integrated and sustainable. The Act requires transport agencies and other key decision makers to have regard to broader social, economic and environmental considerations. It requires all transport agencies to work towards a common goal of providing an integrated transport system. The Act seeks to integrate land use and transport planning and decision-making by extending the framework to land-use agencies whose decisions can significantly affect transport, including the government's planning functions, municipal councils, the GAA and Parks Victoria.

## Queensland



At the State level, the roles and functions of metropolitan planning and infrastructure planning belong to the Department of State Development, Infrastructure and Planning. The department oversees whole-of-government urban and regional planning.

The Queensland Government is responsible for State planning policies and regional plans. Local government planning schemes direct building and development in each local government area. They are periodically reviewed and approved by the Deputy Premier and Minister for State Development, Infrastructure and Planning and must align with the strategic policies set out in regional plans and State planning policies.

Queensland has regional planning committees to oversee development and implementation of regional plans. They are statutory groups created by the Deputy Premier and Minister for State Development, Infrastructure and Planning and include relevant State agencies, councils and community members.

Local area plans are prepared primarily by local governments and give more detail about desirable types of development in particular neighbourhoods. Local area plans are incorporated into the local government planning scheme. They must be approved by the Deputy Premier and Minister for State Development, Infrastructure and Planning and align with the State's strategic policies.

Local governments manage the vast majority of development assessments and mostly determine development applications.

The Queensland Government is currently preparing a single State planning policy that will consolidate the State interests currently articulated in state planning policies and incorporate newly identified interests. This single State planning policy will provide strategic policy and principles to guide planning and, where necessary, development decision-making at the state, regional and local levels.

### Metropolitan planning

The *Sustainable Planning Act 2009* is the foundation of Queensland's planning and development assessment system. It sets out the laws and the tools to manage land use planning and provides a logical sequence of planning from the state, to regional, council, neighbourhood, street and site level. Strategic components of the system include Regional Plans and State Planning Policies.

State planning policies deal with particular issues and can apply across the State or in a specified area. Once it is made, the single State planning policy will set out the State's position across all matters of State interest. Regional plans show the Queensland Government's broad intent for development in particular regions. They shape cities by setting growth boundaries, identifying areas for urban development and outlining how development should occur in a particular region.

The South East Queensland Regional Plan was first established in 1998 and became a statutory planning tool endorsed by Cabinet in 2005. It has been reviewed periodically, most recently in 2009 (SEQ Regional Plan 2009 – 2031). The next review is scheduled to

commence in 2013. The plan encompasses the greater Brisbane area and the major urban centres of Ipswich, Gold Coast, Sunshine Coast, Logan and Toowoomba.

The regional plans inform local-level planning, while the Brisbane City Plan 2000 directs all building and development in the Brisbane City Council area. This plan is under review by Brisbane City Council with anticipated completion in 2013.

## Western Australia



The Western Australian planning system is characterised by the central role exercised by the Western Australian Planning Commission (WAPC), a statutory authority reporting to the Minister for Planning. The WAPC is serviced by planning committees and is supported by the Department of Planning which provides professional and technical expertise, administrative services and other resources, and implements WAPC decisions.

The WAPC has State-wide responsibilities for urban, rural and regional land-use planning and land development matters. It responds to the strategic direction of government and is responsible for the strategic planning of the State. Environmental assessment, where required, is carried out by the Environmental Protection Authority, established under separate legislation.

The Western Australian planning system is partially funded through a land tax known as the Metropolitan Region Improvement Tax. This provides a fund for strategic land purchases such as acquiring land for future urban transport corridors, and to assist with the costs of implementing the Metropolitan Region Scheme.

## Metropolitan planning

The *Planning and Development Act 2005* (Western Australia) is used to prepare and amend State planning policies (SPPs), region schemes, local planning schemes, subdivision and development control, and a State planning strategy, to coordinate and promote land use planning, transport planning and land development in a sustainable manner, and for the guidance of public authorities and local governments.

The WAPC prepared the State Planning Framework (SPP 1) to guide its strategic direction. It unites existing State and regional policies within one document and sets out key principles for the environment, community, economy, infrastructure and regional development, to guide future planning decisions. It also provides a range of strategies and actions which support these principles. An example is *Directions 2031* which aims to guide planning and infrastructure provision to a growing population within the Perth and Peel regions to 2031 and beyond.

Western Australia has a long tradition of metropolitan-wide planning starting with the adoption of the Stephenson-Hepburn plan in 1955 through to *Directions 2031* published by the WAPC in 2010.

The WAPC publishes an annual *Urban Growth Monitor* (UGM) which identifies land zoned for urban development and evaluates growth trends covering more than 110,000 hectares of urban land across the Perth metropolitan, Peel and Greater Bunbury regions. The UGM identifies historic trends of development and monitors density planned for and achieved

in new developments. The UGM tracks progress towards achieving the Directions 2031 strategic vision, such as urban zoned land supply, subdivision approvals, stock of vacant subdivided lots, rates of infill and trends in residential density.

The UGM is produced as part of the Urban Development Program (UDP) which monitors and coordinates land supply, development and infrastructure to deliver a more effective use of land, better staging of development and prioritisation of infrastructure spending. The program includes a series of annual publications covering historical information, assessments of demand drivers and forecasts of land supply in the short, medium and long term. *The Perth and Peel Development Outlook 2011/12* provides a detailed overview of urban development patterns across the Perth and Peel metropolitan area. UDP publications and online applications also describe the 'land supply pipeline', identifying and reporting on the key stages of the land supply process to provide a comprehensive assessment of land, lot and dwelling supply across Western Australia.

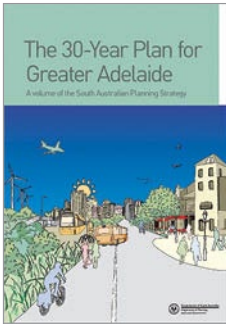
Metropolitan planning is supported by the Western Australian Land Availability Working Group, chaired by the Director-General of the Department of the Premier and Cabinet, and comprising the Directors General of relevant agencies. This group reports to the Ministerial Taskforce on Approvals, Development and Sustainability, a sub-committee of Cabinet, and is responsible for initiating, appraising and overseeing initiatives and approaches aimed at improving land availability, housing supply and infrastructure provision. This allows for whole-of-government consideration of planning issues and the ability to report issues and initiatives directly to elected decision makers.

Responsibility for oversight of significant urban and regional land and housing development has been assigned to the Department of Planning through the Lead Agency Framework. The Lead Agency Framework, implemented in October 2009, nominates a State government agency to help proponents through approvals processes.

Four agencies are responsible for delivery of urban developments against milestones. They are the Department of Planning, LandCorp, the Office of Strategic Projects and the Metropolitan Redevelopment Authority which commenced operation on 1 January 2012. It replaces and combines the responsibilities of the former separate Armadale, East Perth, Midland and Subiaco Redevelopment Authorities.



## South Australia



The South Australian Government initiated a series of machinery-of-government changes in late 2011 involving a whole-of-government approach to seven new strategic priorities which complement the targets of South Australia's Strategic Plan. Amongst these was the creation of a new department which integrates land use planning, transport and infrastructure functions. The Department of Planning, Transport and Infrastructure determines the South Australian planning policy framework which embodies the government's vision for future development through the *South Australian Planning Strategy* – an overarching suite of spatial plans covering each region of the state.

The State Government Planning Coordination Committee consists of senior government representatives. It co-ordinates state-significant planning and development matters with a focus upon a whole-of-government approach to deliver the *SA Planning Strategy*, by providing strategic policy advice to Chief Executives and/or Ministers and Cabinet, signing-off on agreed advice, including but not limited to, draft Structure Plans.

The *SA Planning Strategy* contains a series of strategic land use plans prepared for each region of the state. They represent a whole-of-government approach to the future development of each region, promoting social, economic and environmental outcomes tailored to the unique characteristics of each region. The *30-Year Plan for Greater Adelaide* was released in 2010.

Every five years, Strategic Directions Reports are prepared for local government areas. These set the agenda for amendments to local Development Plans – changes that are designed to align with the priorities outlined in the relevant volume of the Planning Strategy and with the standardised set of policies of the South Australian Planning Policy Library.

The Development Policy Advisory Committee is a body established under the Development Act to provide advice on a range of development matters, including advice to the Minister for Planning on amendments to the Development Act, regulations and local development plans and on other matters of state planning policy.

The Environment, Resources and Development Committee is a Standing Committee of the Parliament of South Australia and reviews planning policy matters of state significance before the Parliament.

The State Government collaborates with local governments on planning policy matters through regional organisations of councils established by the South Australian Local Government Association. These meet regularly with key representatives of state government agencies to maintain co-operation and promote the effective co-ordination of service delivery. Local governments determine development applications, with independent development assessment panels or where matters of increased complexity are considered the State government Development Assessment Commission.

Clear processes of appeal and review of planning and development decisions are well established in South Australia. The Environment, Resources and Development (ERD) Court has jurisdiction over most development application matters which result from appeals to planning decisions issued by a planning authority. The ERD Court also provides for a less formal pre-trial conference model which has substantially reduced the number of appeals going to court.

## Metropolitan Planning

The Adelaide metropolitan area, together with the surrounding hills, coast and hinterland are contained in a single volume of the Planning Strategy – *the 30-Year Plan for Greater Adelaide*. Released in 2010, the *30-Year Plan* envisages a new urban form designed to cater for the medium to long term needs of the city and its surrounds in the context of changing environmental, economic and social needs. The *30-Year Plan* seeks to promote the following key planning directions for the future development of Greater Adelaide:

- The containment of urban sprawl through enabling higher density development within the existing urban area
- The creation of growth precincts including along existing transit corridors and through the identification of sites suitable for Transit-Oriented Developments
- Moving away from a model of land-use separation towards a model of mixed-use development in higher density growth precincts
- Planning for population growth of 560,000 people, the construction of 258,000 additional dwellings and for economic growth of \$128 billion
- Outlining where people will live, where jobs will be created and where future transport and other infrastructure will be located
- Seeking to protect the city's history, character and environmental heritage whilst managing risks and the potential effects of climate change.

The targets contained within the *30-Year Plan for Greater Adelaide* are monitored on an annual basis with significant reviews of all Planning Strategy Volumes every five years. During the review process, significant periods of public and agency consultation are undertaken – a statutory requirement in South Australia.

The State Government has also recognised the importance of the internationally renowned Barossa and McLaren Vale areas by enacting legislation designed to protect those areas from urban encroachment and to maintain productive capacity.

Guided by the objectives of the *30-Year Plan*, local development plans have undergone amendments using the suite of policy tools available in the South Australian Planning Policy Library. Certain areas of the city have also undergone a structure planning process to plan for future infrastructure and development investment. These areas include both greenfield housing developments to the north of Adelaide as well as key brownfield development sites, transit corridors and the inner rim of the CBD.

## Tasmania



Governance arrangements for regional and city planning in Tasmania embrace both cooperative and statutory approaches.

In 2007 the Tasmanian Government established the Regional Planning Initiative (RPI) and signed Memoranda of Understanding (MOUs) with the State's three regional local government organisations (Cradle Coast Authority, Northern Tasmanian Development and the Southern Tasmanian Councils Authority) and their respective member councils to prepare:

- Regional land use strategies
- Regional planning scheme templates
- New council planning schemes consistent with the regional strategy and template.

Regional planning steering committees comprising local and State government representatives were established under the MOUs. The Government provided funding for the engagement of project teams and consultants to conduct the research, analysis, plan preparation and consultation prescribed in the MOUs.

The Government also initiated amendments to the Land Use Planning and Approvals Act 1993 authorising the Planning Minister to:

- Declare a region and a Regional Land Use Strategy (RLUS)
- Require councils to ensure their new schemes comply with the RLUS and be consistent with state-wide planning scheme template and planning provisions.

The amendments empower the Planning Minister to review and revise regional land use strategies.

In 2010, the Minister requested the recently created Tasmanian Planning Commission (TPC), to oversee the implementation of the RPI and the cooperative regional governance arrangements operating under the MOUs.

The three regions have produced their respective regional land use strategies. The regions have also produced draft regional model planning scheme templates.

Northern Tasmanian Councils have submitted draft interim planning schemes for review in accordance with the Northern RLUS, the state-wide and regional templates and other legislative requirements. The City of Launceston Interim Planning Scheme is the first northern region and Tasmanian interim scheme to be declared by the Minister.

Councils in the Cradle Coast and Southern regions are preparing new, consistent and contemporary planning schemes.

## Metropolitan Planning

The Planning Minister also requested the TPC to manage implementation of the COAG Capital Cities Agreement and COAG Reform Council's compliance process. A capital city steering committee of metropolitan council representatives from the southern planning steering committee and State agency representatives was formed to coordinate State agency and local government strategies for the greater Hobart plan. Relevant components

of the final capital city plan will be incorporated into the Southern RLUS and other economic development, infrastructure and service implementation plans and programs.

The Launceston City Council has also received Commonwealth funding and State assistance to undertake a similar exercise to produce a greater Launceston city plan. The final plan will be integrated into the Northern RLUS and other relevant implementation plans and programs.

The final element of the Regional Planning Initiative is to develop a city-region governance structure and system for ongoing regional and metropolitan planning. The TPC has produced a draft discussion paper on city-region governance principles, functions and options in consultation with representatives of the three regional steering committees and the capital city steering committee.

Further stakeholder consultations are planned prior to a report being presented to the Planning Minister and Government to formalise an ongoing city-region planning structure and system for Tasmania.

## Northern Territory



The Northern Territory Government, through the Minister for Lands, Planning and the Environment, is responsible for administering the *Northern Territory Planning Act 2009*.

A single statutory planning document, the *Northern Territory Planning Scheme*, applies to the whole of the Northern Territory. It contains the Government's planning principles and outcomes for land-use planning and development control. The scheme also contains framework drawings and area plans which further detail the principles and objectives for the development of major urban and regional centres such as the Darwin and Alice Springs.

The Northern Territory Government is in the process of amending the *Planning Act 2009* to establish the Northern Territory Planning Commission which will have Territory-wide powers. The functions of the Commission will be to prepare integrated strategic land use and infrastructure plans at the regional, city, town and local levels, and to provide guidelines and assessment criteria for inclusion in the Northern Territory Planning Scheme. A secondary role of the Commission will be to provide advice to the Minister on significant developments.

The Development Consent Authority, rather than local councils, is responsible for determining development applications in accordance with the Northern Territory Planning Scheme.

Membership of the Development Consent Authority includes two representatives of local councils. Councils also work with the Northern Territory government on changes to the Northern Territory Planning Scheme.

## Metropolitan planning

The Northern Territory Government has developed a range of integrated and co-ordinated strategic plans for the growth of the Territory and is continuing to develop others.

The 10-year Infrastructure, Roads and Transport strategies were released in February 2012.

One of the first tasks of the Northern Territory Planning Commission will be to finalise the strategic land use plan for the Greater Darwin Region. The plan will include a review of the *Darwin Regional Land Use Structure Plan 1990* and will build on the discussion paper titled *Planning for Greater Darwin – A Dynamic Harbour City* and the draft *Greater Darwin Plan* that was publicly exhibited in early 2012.

## Australian Capital Territory



Land planning and administration in the Australian Capital Territory (ACT) is based on a leasehold system. This system was adopted to ensure that government could realise the planning outcomes for the new capital city without the limitations associated with land in private ownership.

The Commonwealth Government maintains an interest in the overall planning of the National Capital to safeguard those aspects of “national significance”. The *National Capital Plan* is the overarching statutory plan that sets out broad land use policy within the ACT. The National Capital Authority is the Commonwealth agency charged with administering the *National Capital Plan* and has the planning responsibility for all ‘designated’ land (deemed to be of national importance) including leased land administered by the Territory.

The ACT Government has both State and local government functions. It is responsible for the urban management of Canberra, including the provision of civil and community infrastructure, the protection of the environment and the administration and development of both rural and urban land. Planning policy advice is given to the ACT Government through the Environment and Sustainable Development Directorate, which, through the Chief Planning Executive, also has independent statutory approval powers for applications. The Minister for the Environment and Sustainable Development reserves ‘call-in’ powers for development applications under certain circumstances.

A Directors-General Land Supply Committee has been established to support the delivery of the Government’s land supply program and to oversee the co-ordination of infrastructure and environmental approvals. This Committee reports to the Urban Development Committee, a sub-committee of the ACT Cabinet. The *Planning and Land Management Act 1988 (Cth)* sets out the broad interrelationships between the ACT Government and the Australian Government in planning and managing Canberra. This Act establishes the significance of the National Capital Plan and that the urban planning and development of Canberra, in the broadest sense, must not be inconsistent with the National Capital Plan.

The ACT’s *Planning and Development Act 2007* provides for the Territory Plan, which is the ACT’s statutory planning document. Planning responsibility is divided between the Commonwealth and ACT Governments but urban management functions are almost solely the responsibility of the ACT. A variety of formal and informal processes is in place to coordinate and manage this division in Territory/Commonwealth interests.

There is no formal regional organisation of councils within the Territory given its sole jurisdiction. However, because of its proximity and close interrelationship, the Canberra-Queanbeyan statistical district also contains the City of Queanbeyan (located within New South Wales). In May 2012, the ACT was made a member of the South East Regional

Organisation of Councils in recognition of the significant inter-dependency between the ACT and its surrounding region. The ACT Government also liaises directly with the NSW Government and adjoining local government areas through various forums and through the NSW Cross Border Commissioner.

## Metropolitan Planning

The Canberra Plan is the ACT Government's highest order strategic plan. It identifies the objectives and outcomes for the social, cultural, economic and environmental development of the ACT. In 2004 the Canberra Spatial Plan (and companion Sustainable Transport Plan) was adopted as the ACT Government's strategic land use plan. The *Planning and Development Act 2007* made this a notifiable instrument and nominated these plans as the 'Transitional Planning Strategy'. This Act also called for the Executive of Government to consider the reviewing the ACT Planning Strategy every five years.

In line with this, the ACT Government commenced this review as part of the Sustainable Future Program. The ACT Government also conducted a broad public consultation program *Time to Talk: Canberra 2030*. The results of both programs informed the development of the new ACT Planning Strategy, released by the ACT Government in August 2012. The *ACT Planning Strategy* along with *Transport for Canberra and Weathering the Change Action Plan 2* will guide the land use planning and urban form policies for Canberra. In essence they will give spatial effect to the social and economic strategic plans. These documents are broadly consistent with the *Metropolitan Structure Plan* contained within the *National Capital Plan* and also provide a reference for the *Territory Plan*.

Weston, Canberra.

Image courtesy of Richard Longman



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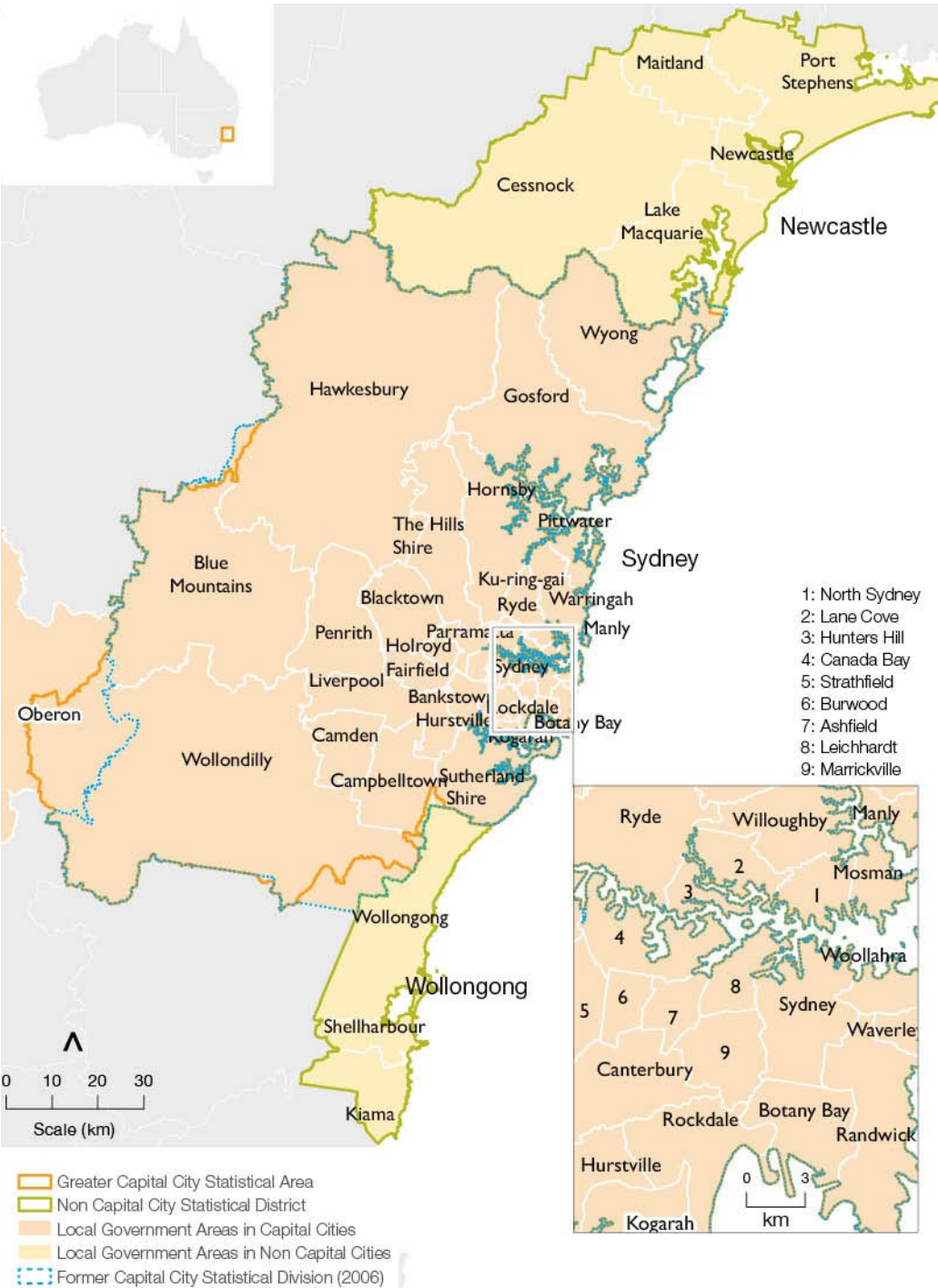




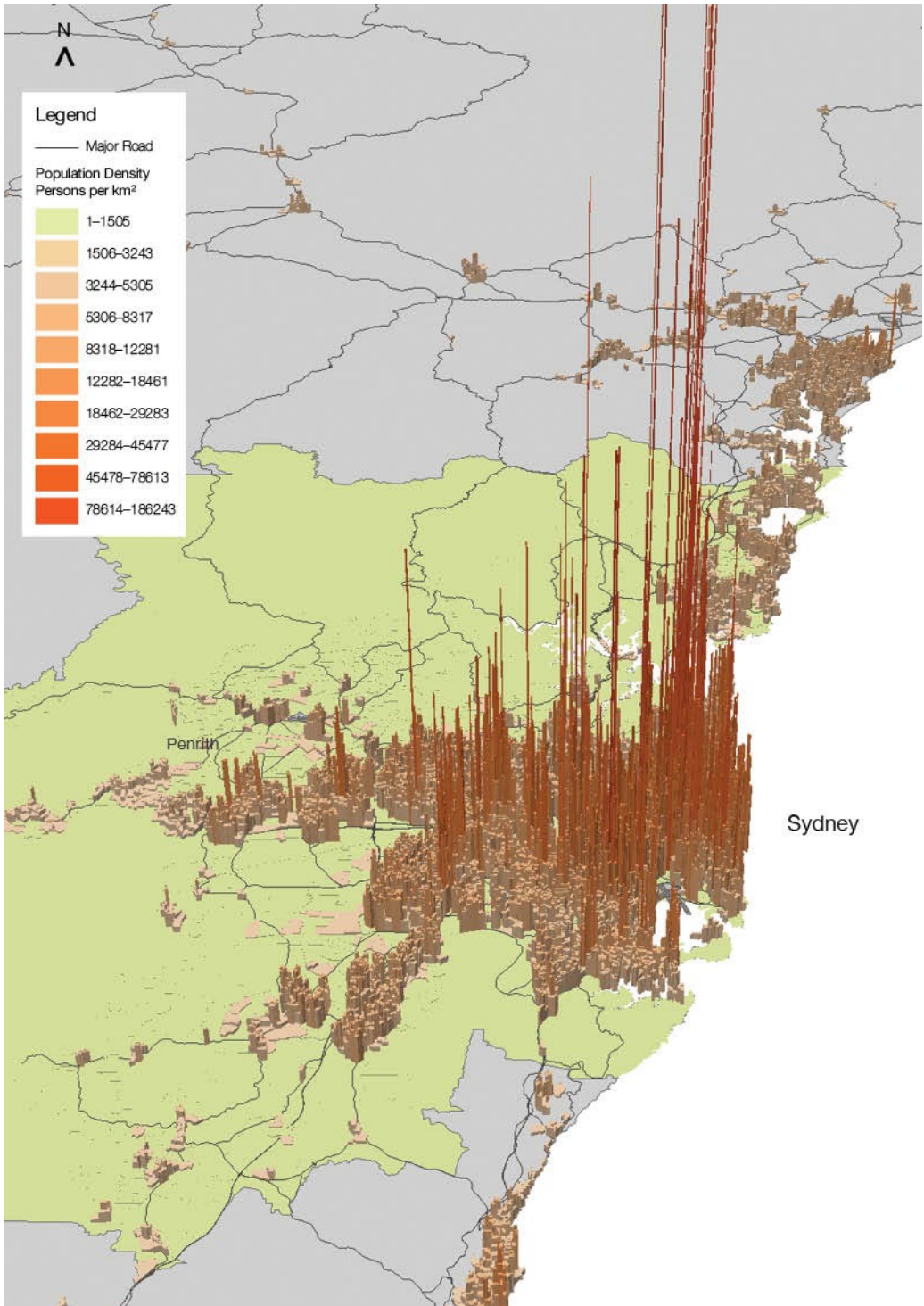
# Appendix A: Maps of major cities

Maps of major cities, local government areas  
and population density

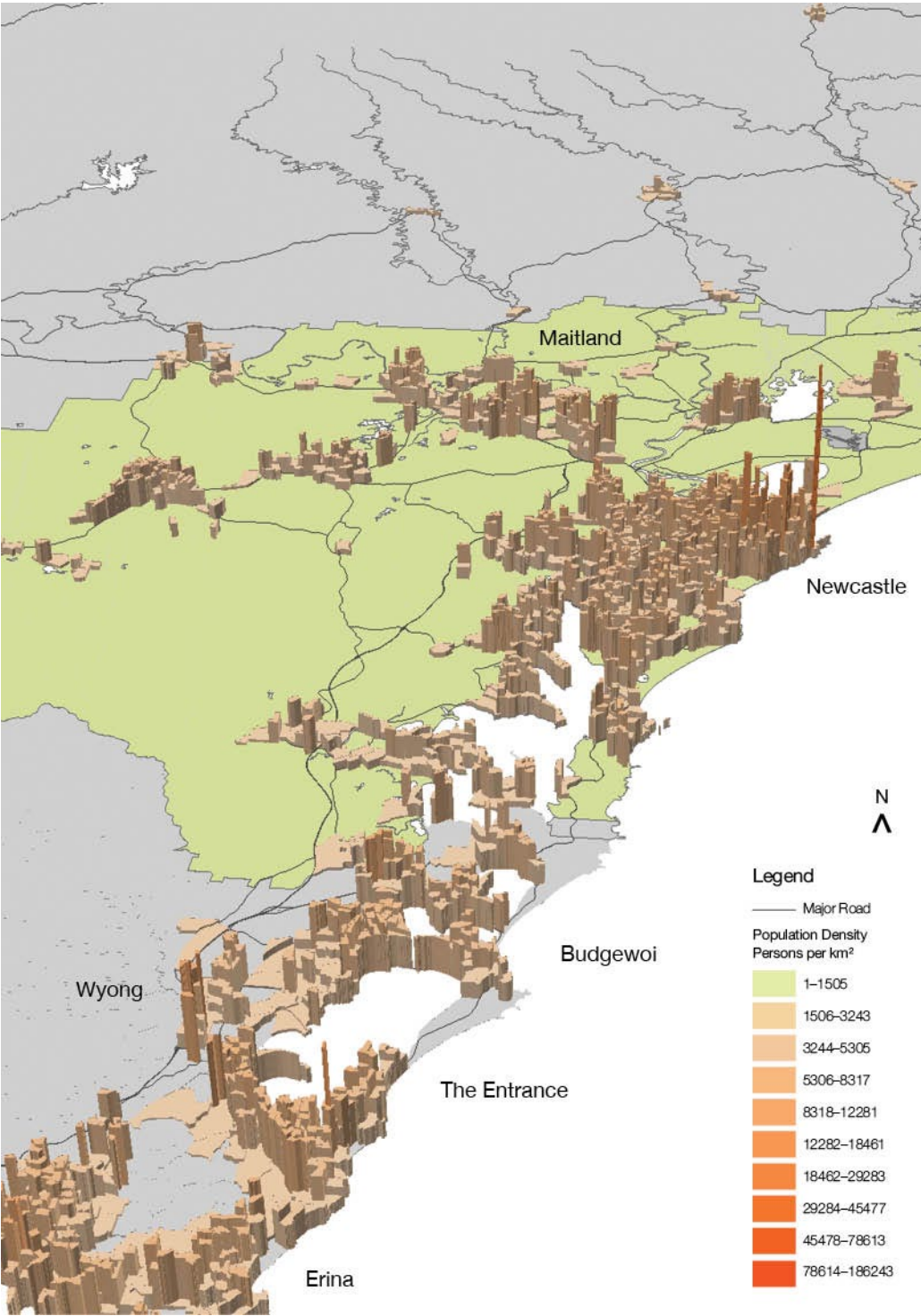
# Local Government areas in Sydney, Newcastle and Wollongong



## Population density in Sydney

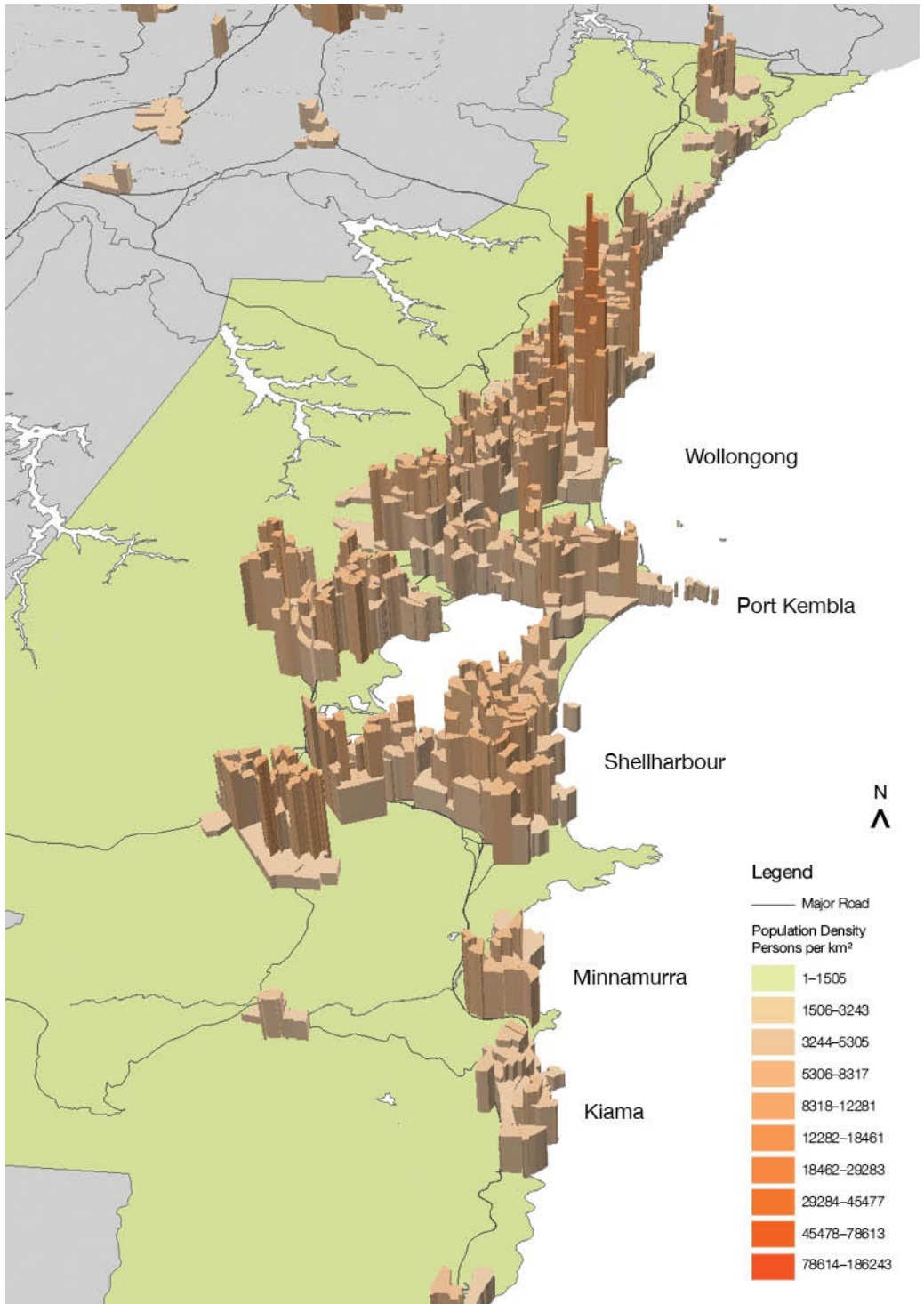


# Population density in Newcastle





## Population density in Wollongong

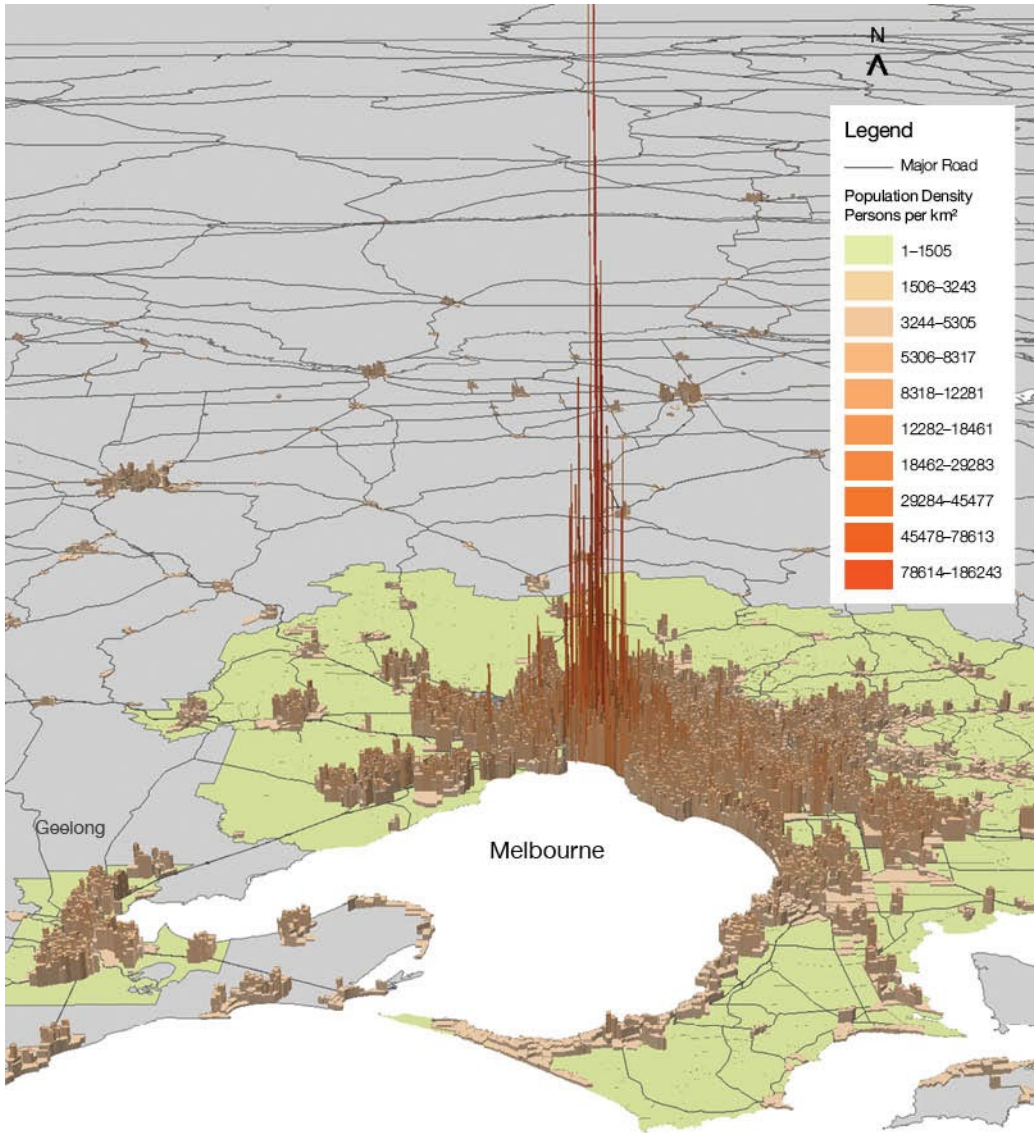


# Local Government areas in Geelong and Melbourne

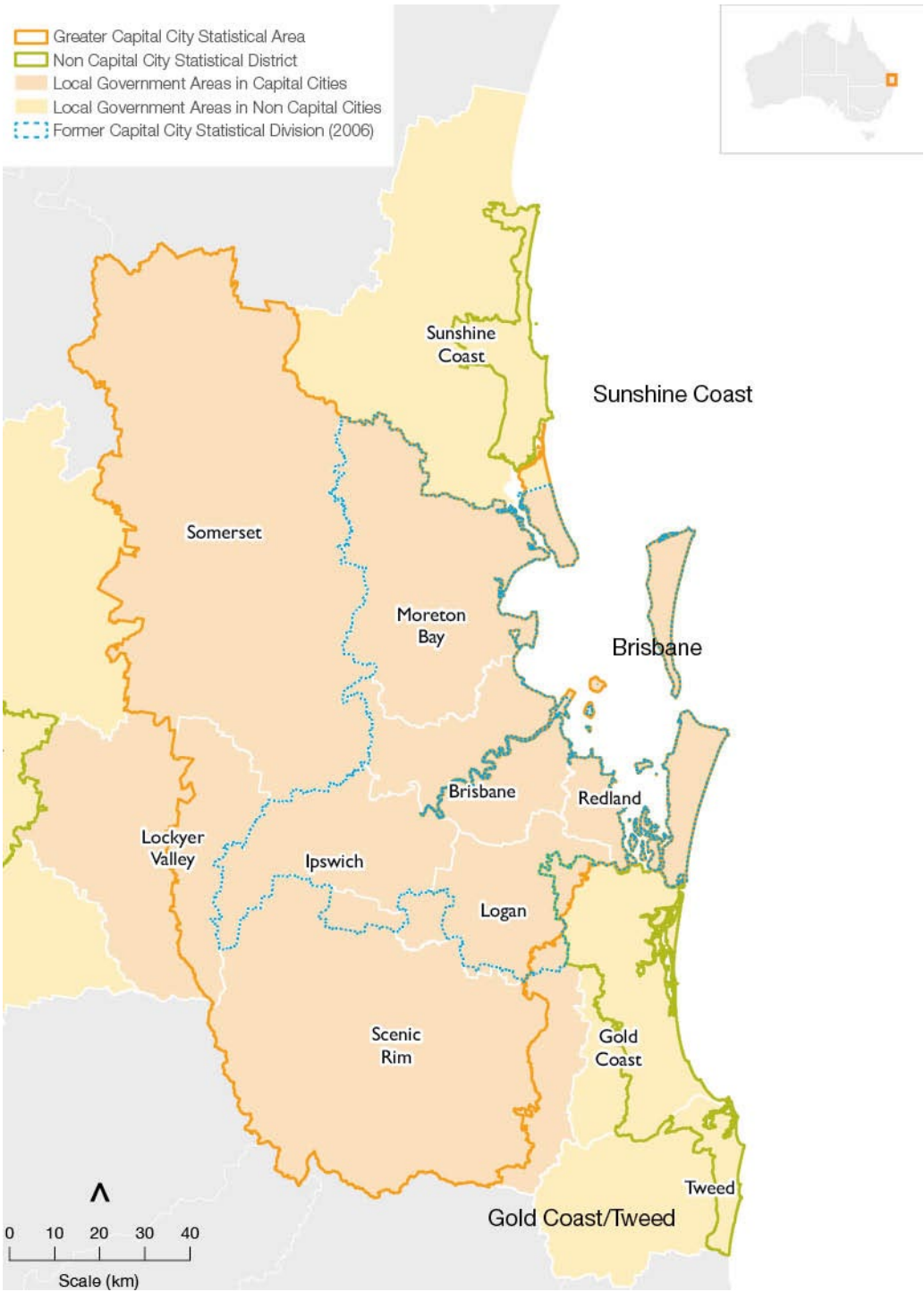




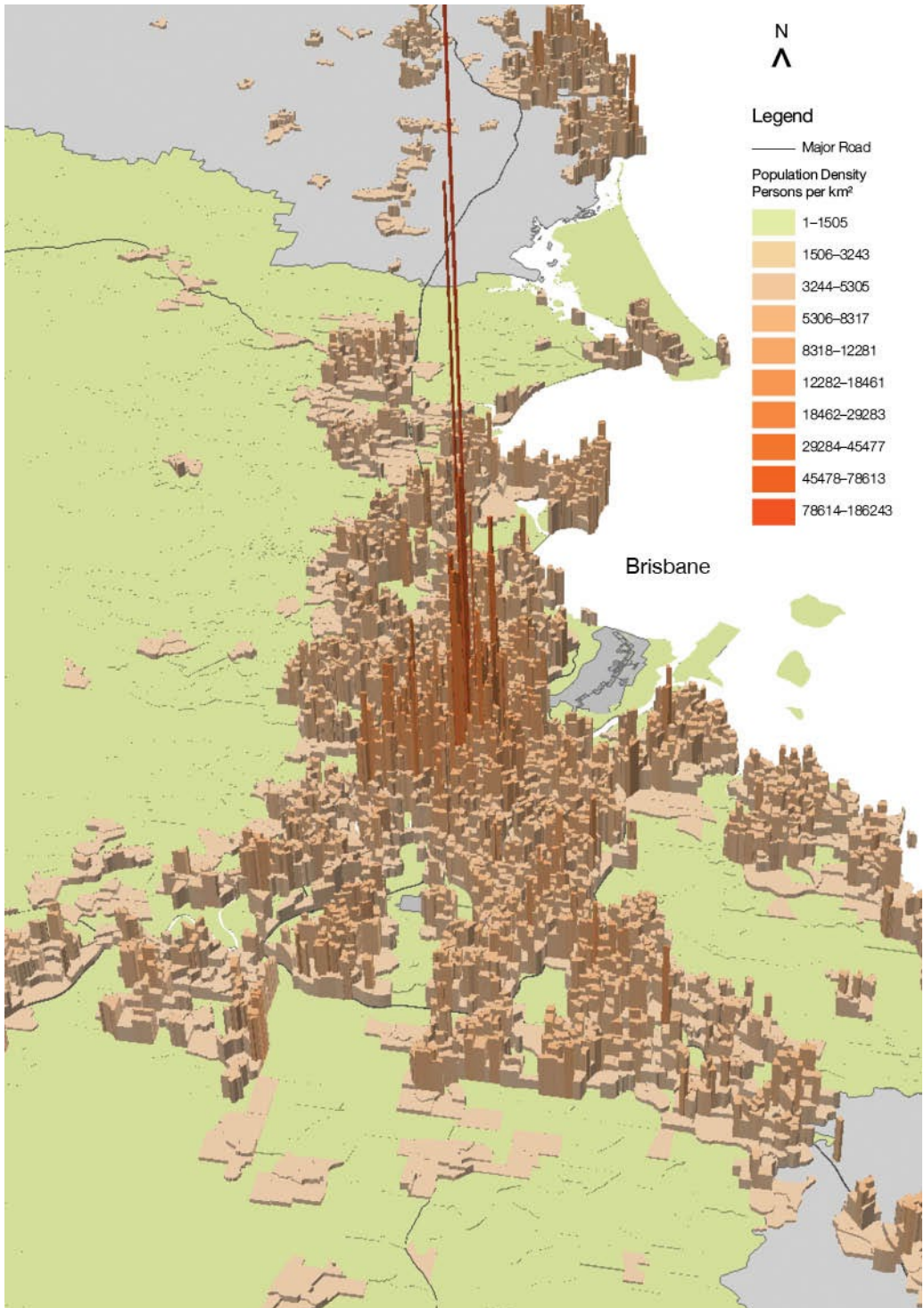
## Population density in Geelong and Melbourne



# Local Government areas in Brisbane, Sunshine Coast and Gold Coast

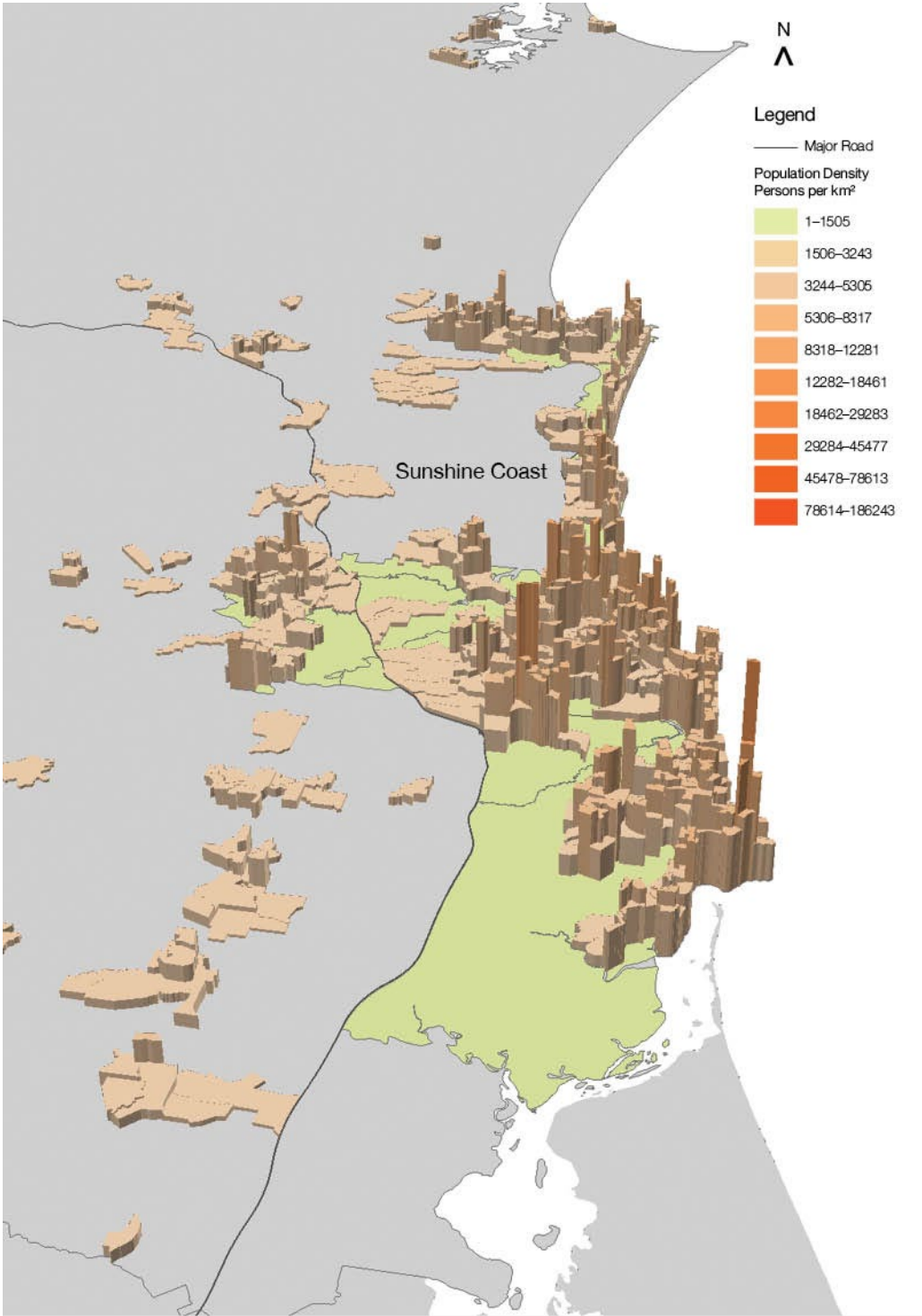


## Population density in Brisbane

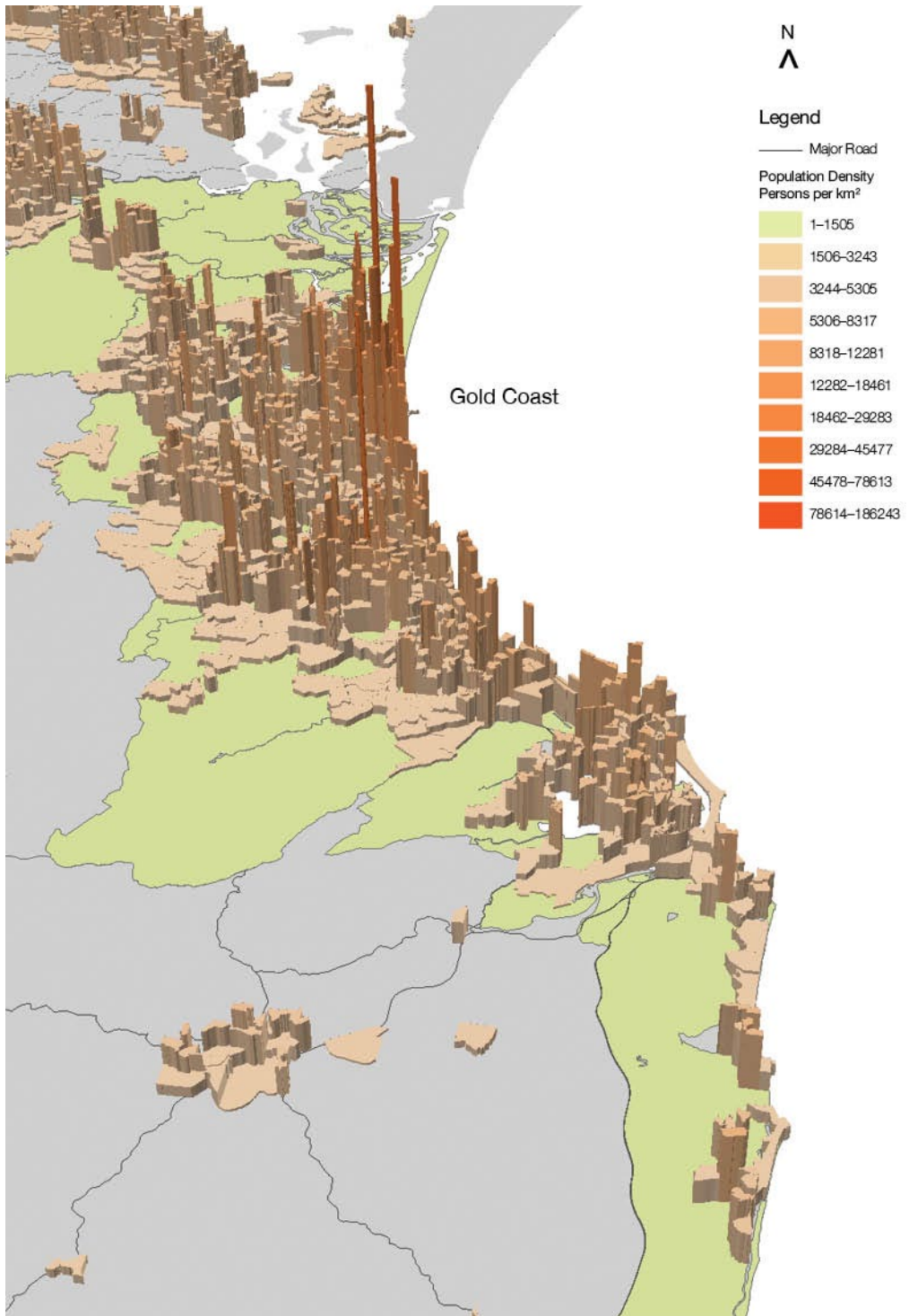




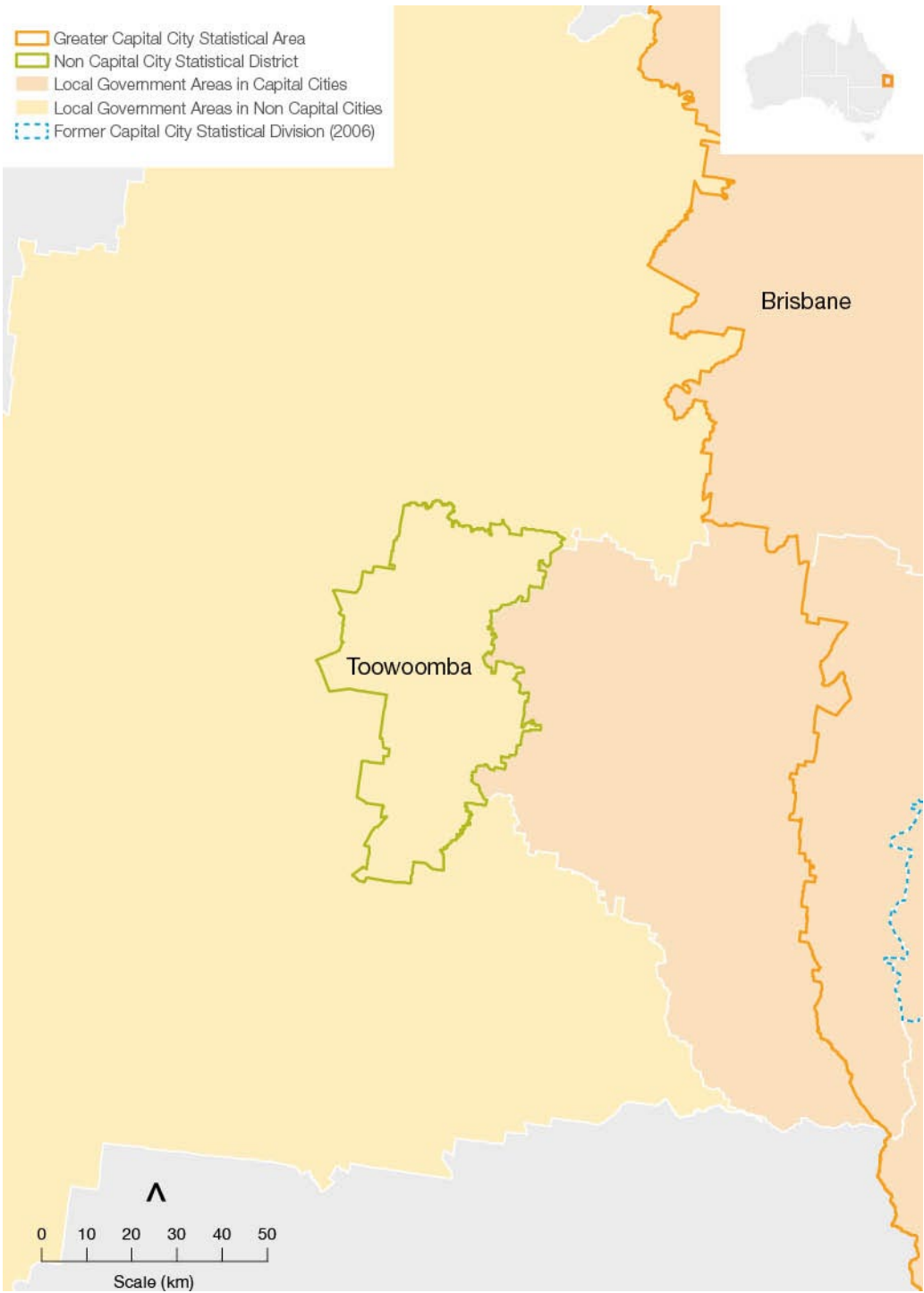
# Population density in Sunshine Coast



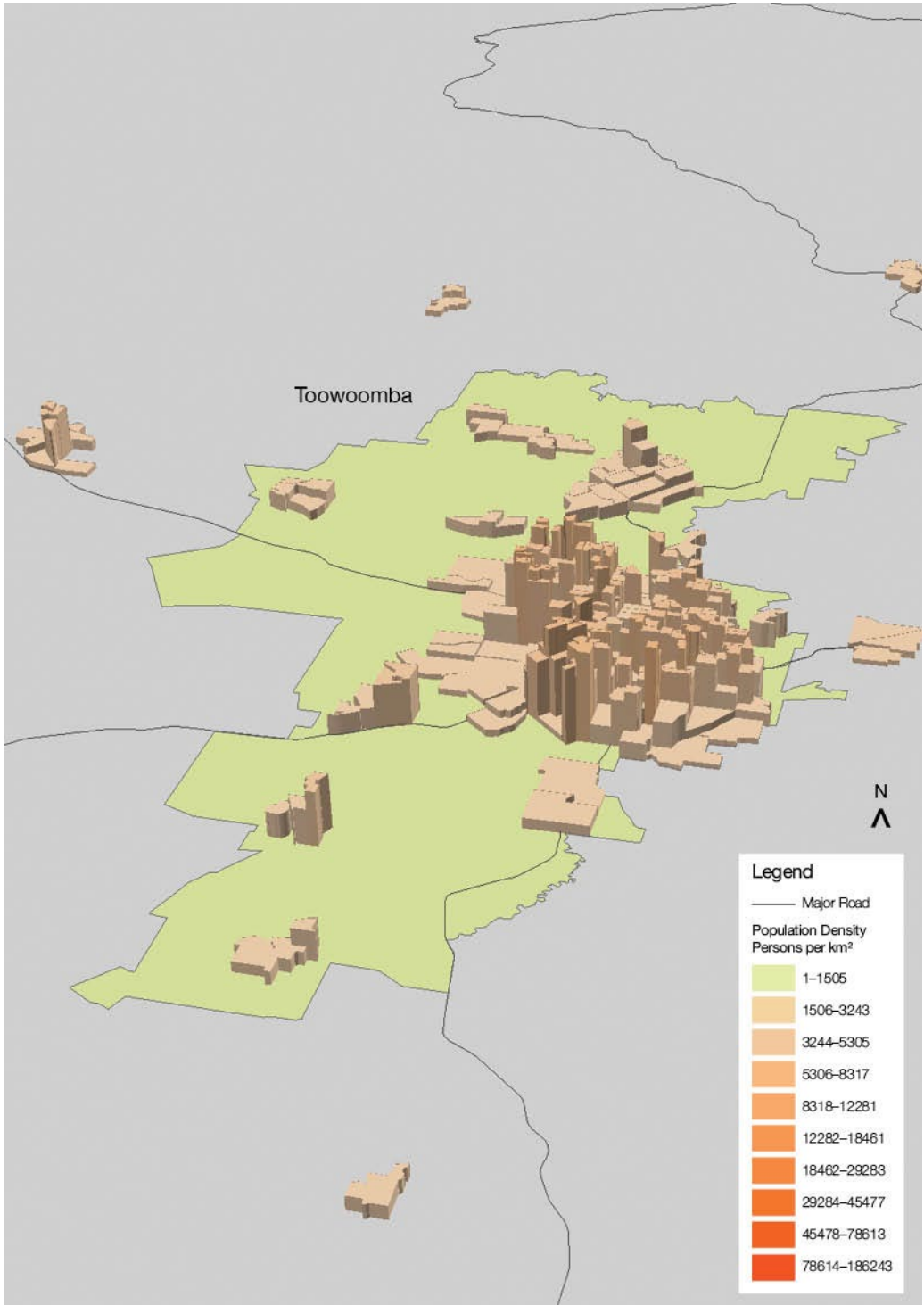
## Population density in Gold Coast



# Local Government areas in Toowoomba

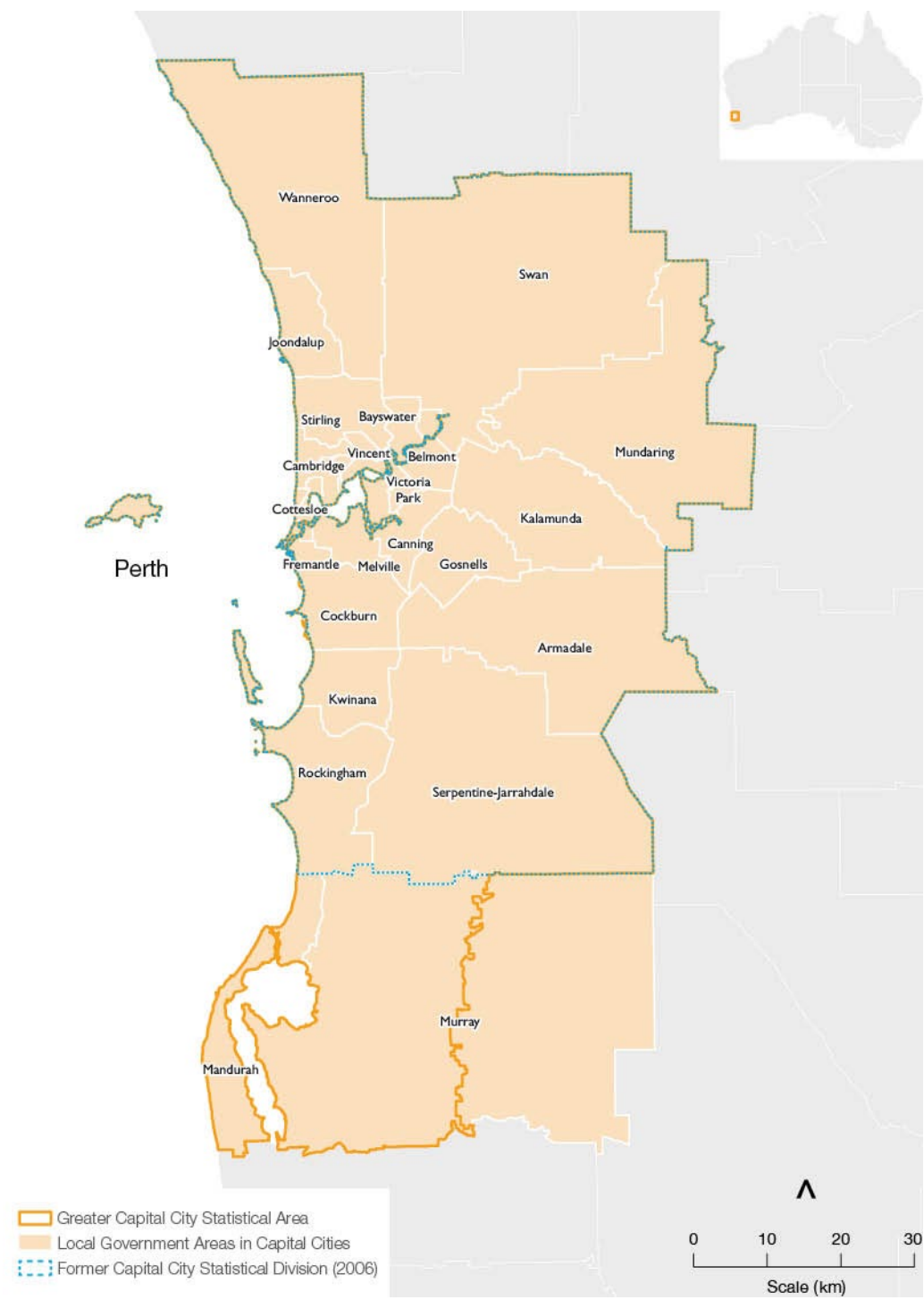


## Population density in Toowoomba

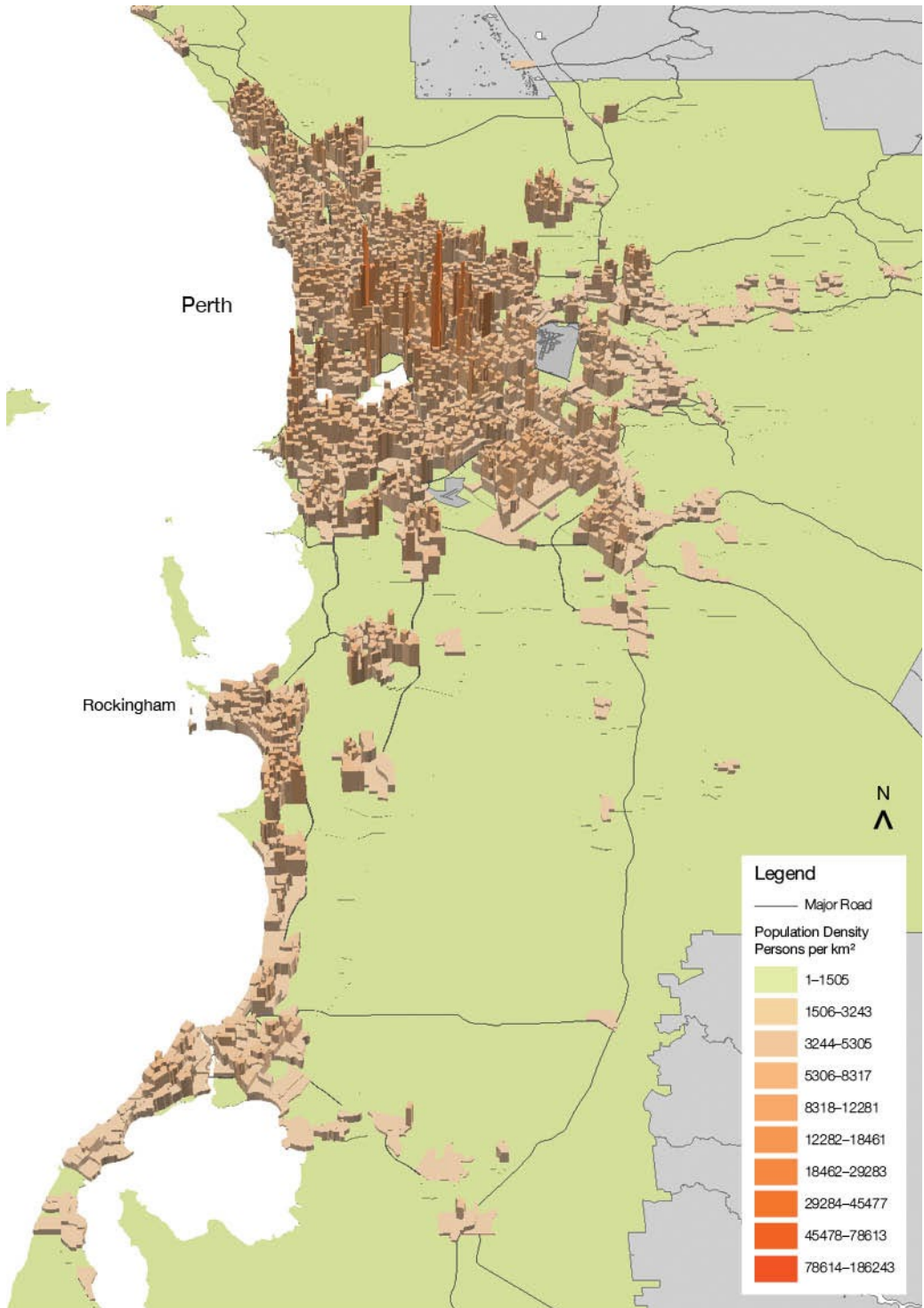




Local Government areas in Perth



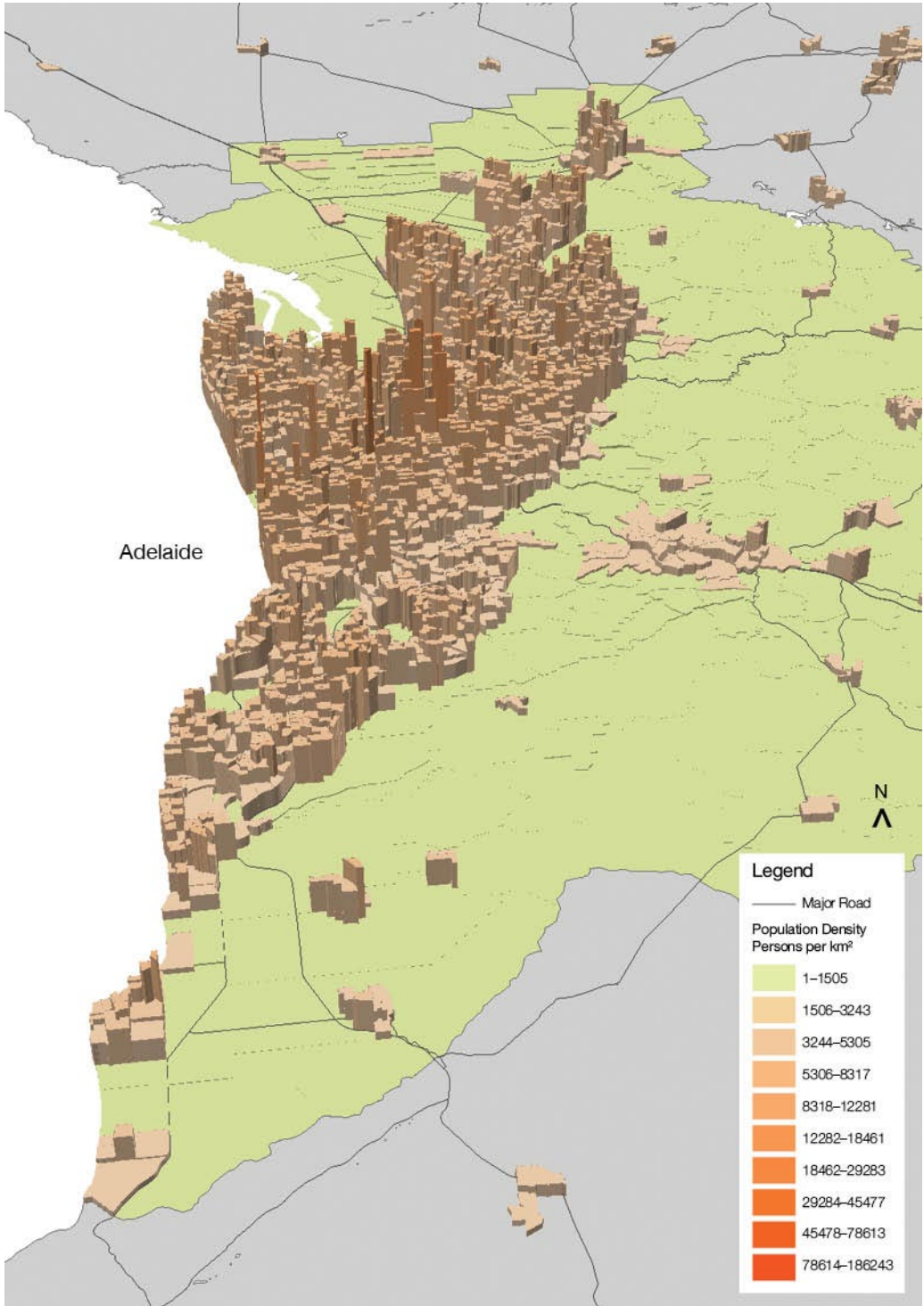
## Population density in Perth



Local Government areas in Adelaide



## Population density in Adelaide

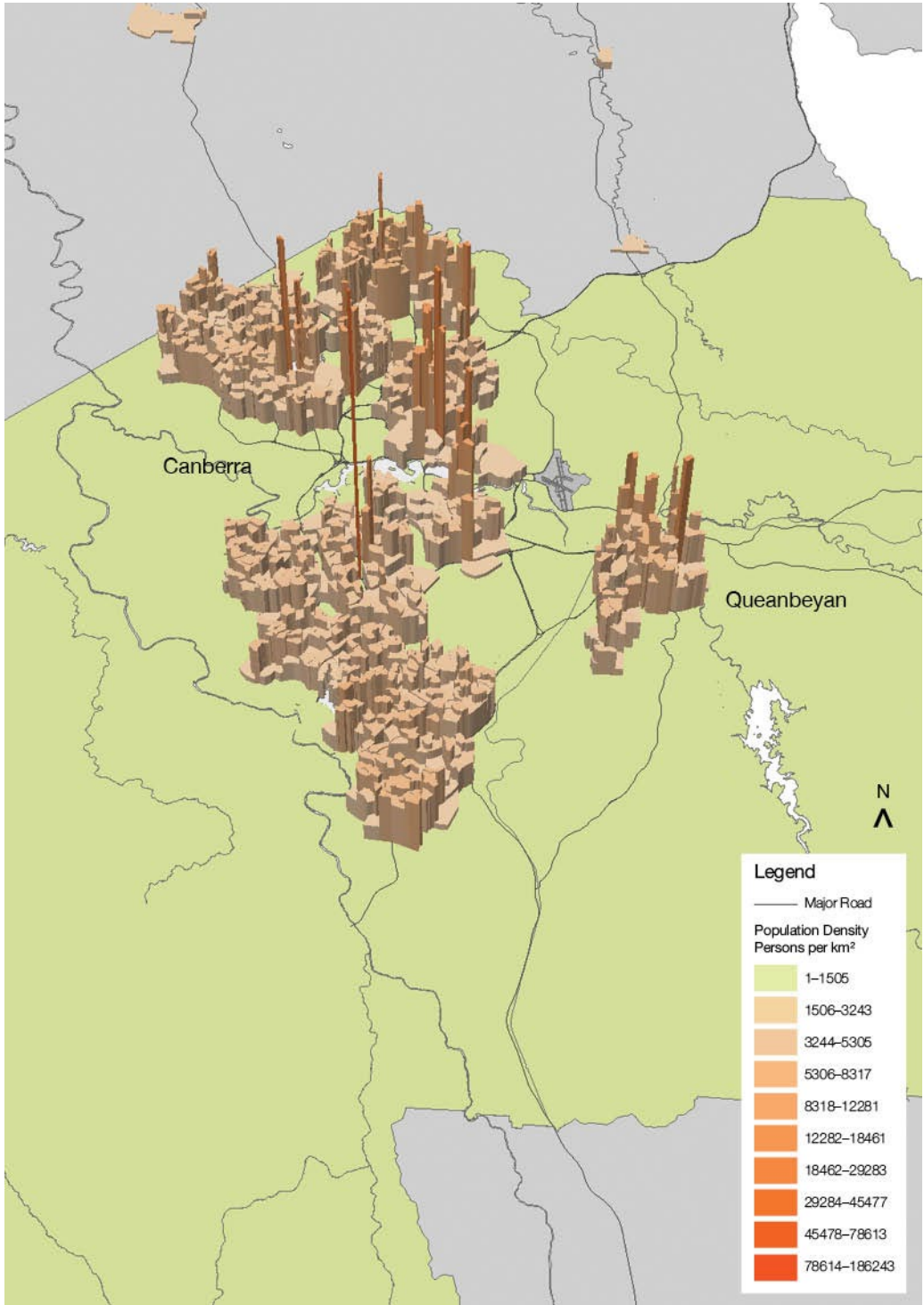


# Local Government areas in Canberra – Queanbeyan





## Population density in Canberra – Queanbeyan

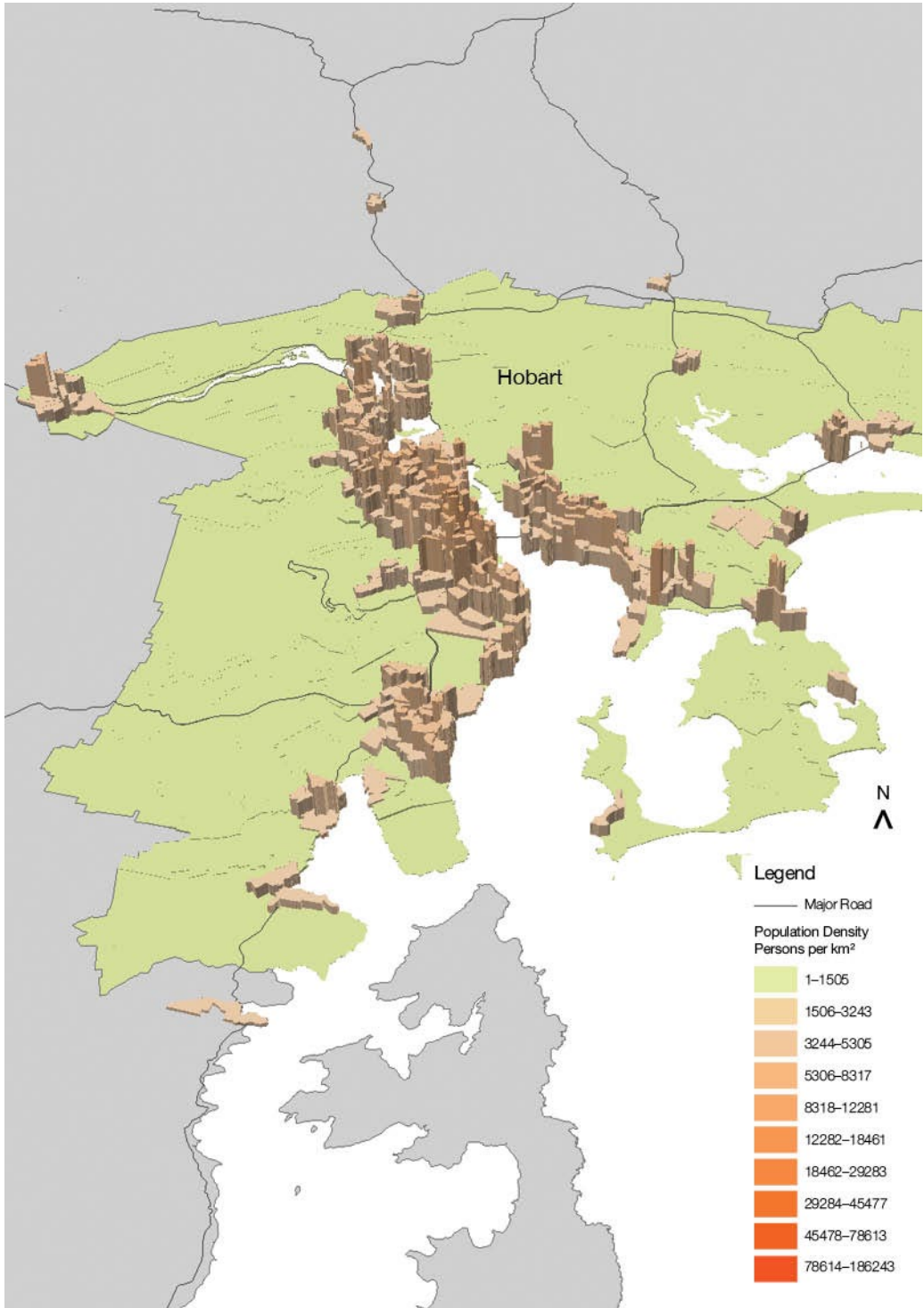


Local Government areas in Hobart

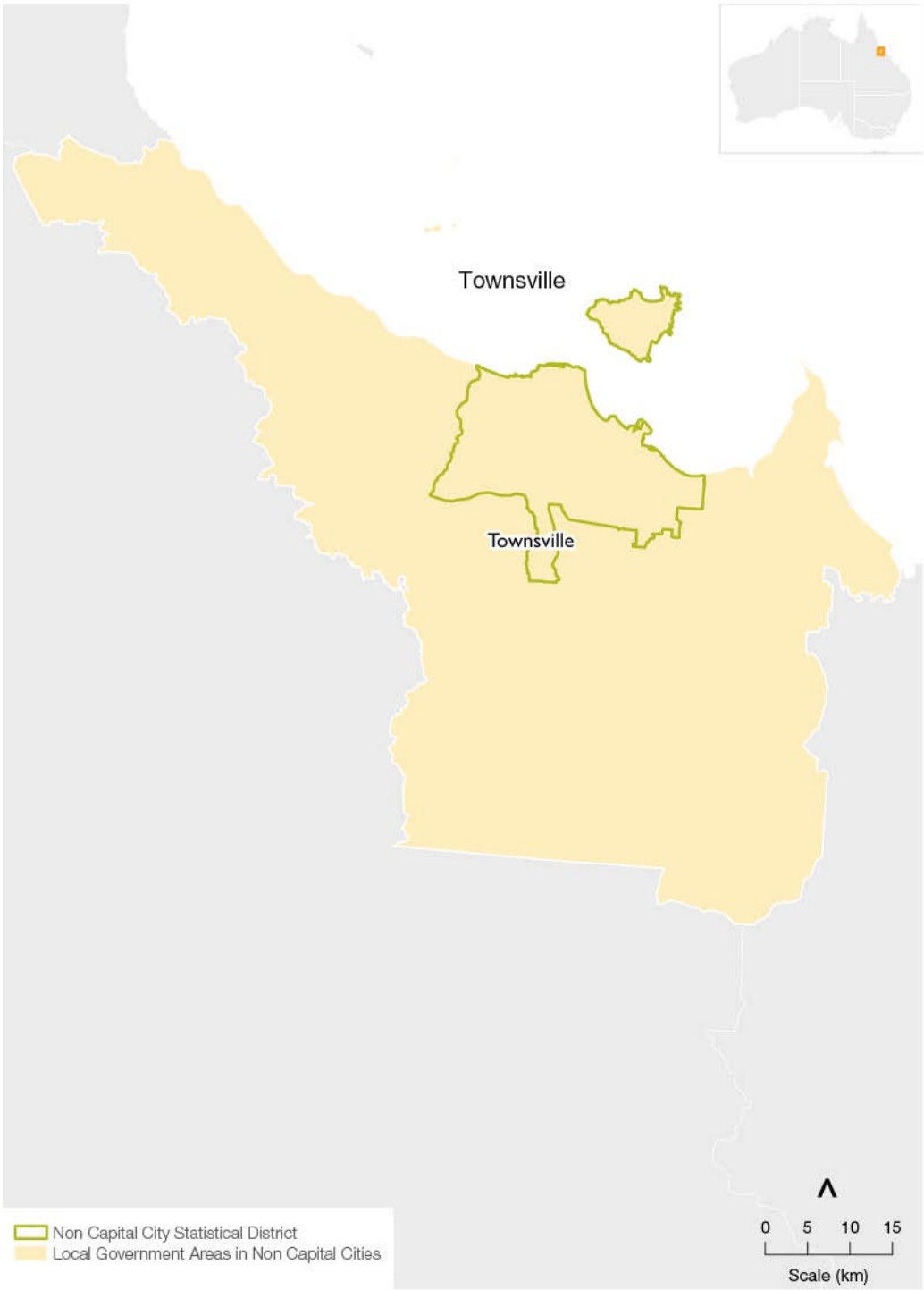




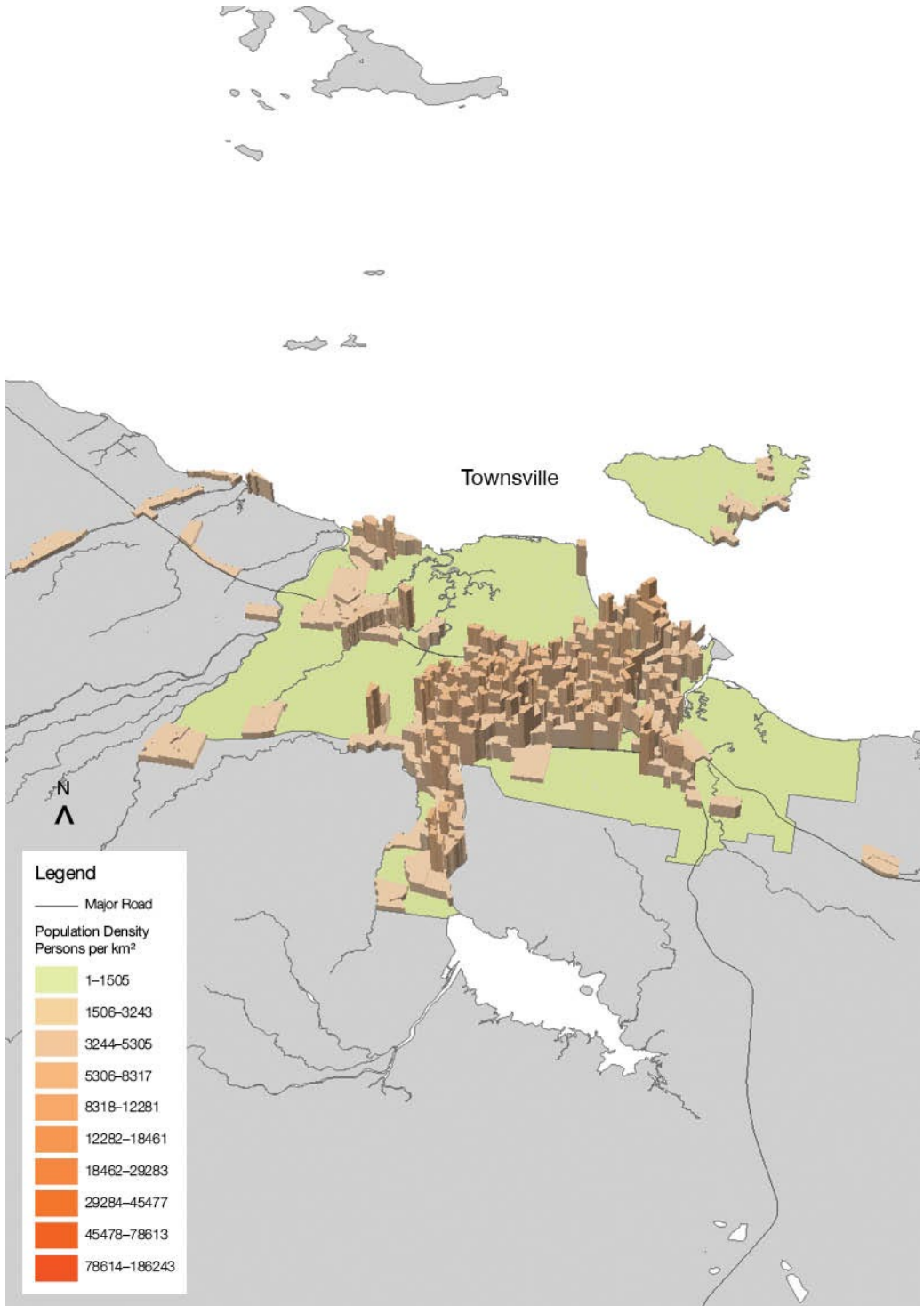
## Population density in Hobart



# Local Government areas in Townsville



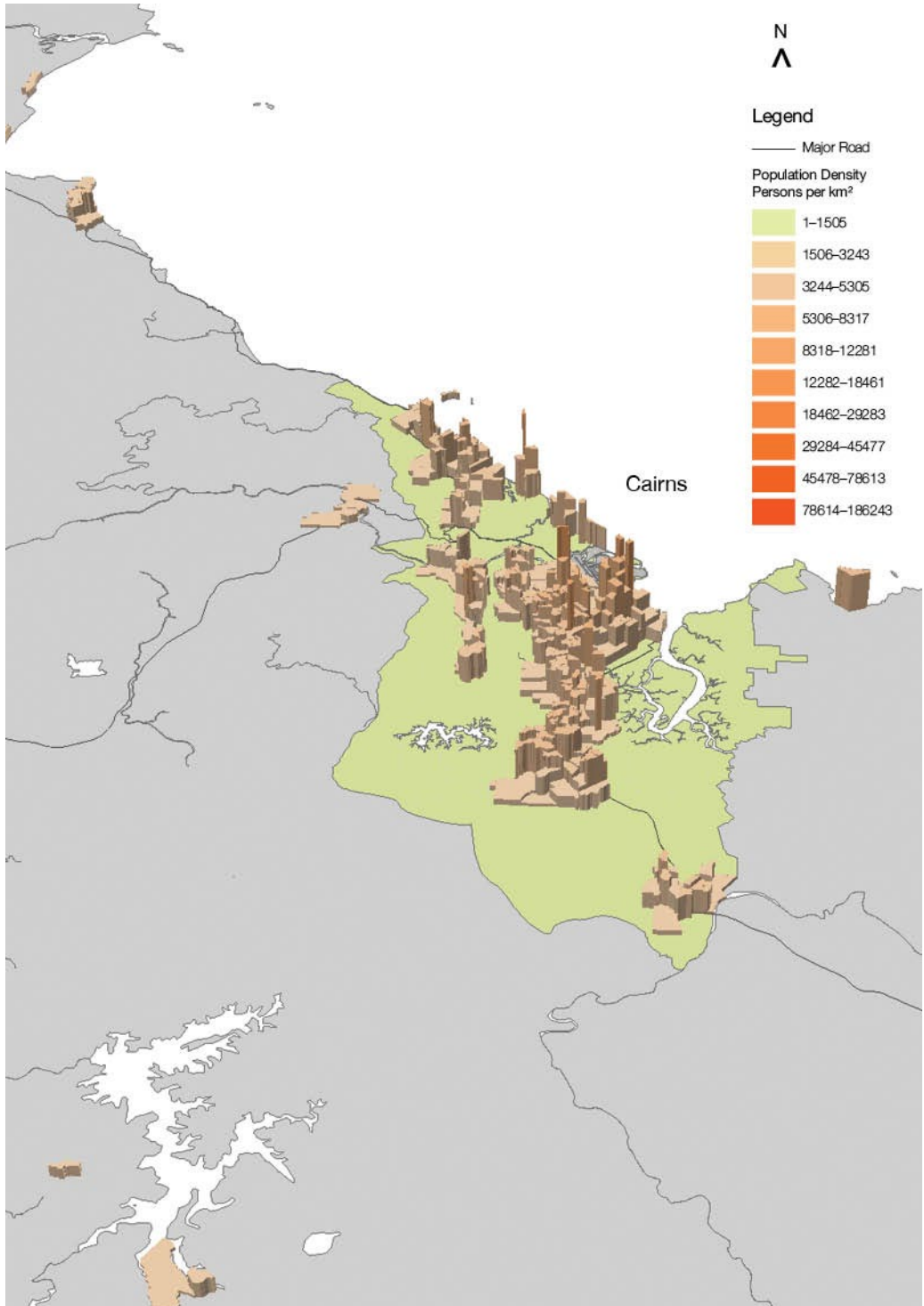
## Population density in Townsville



Local Government areas in Cairns



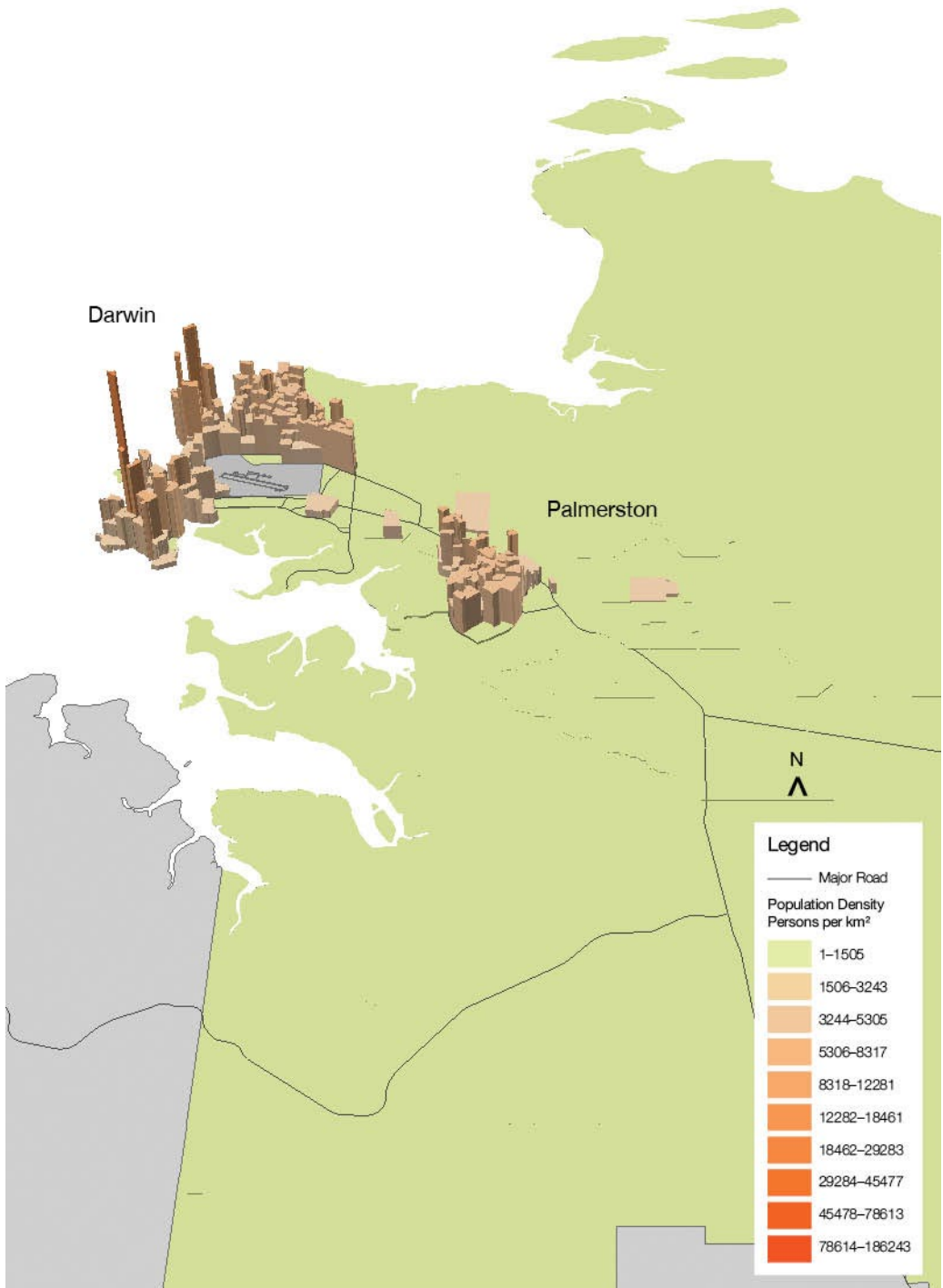
## Population density in Cairns



Local Government areas in Darwin



## Population density in Darwin

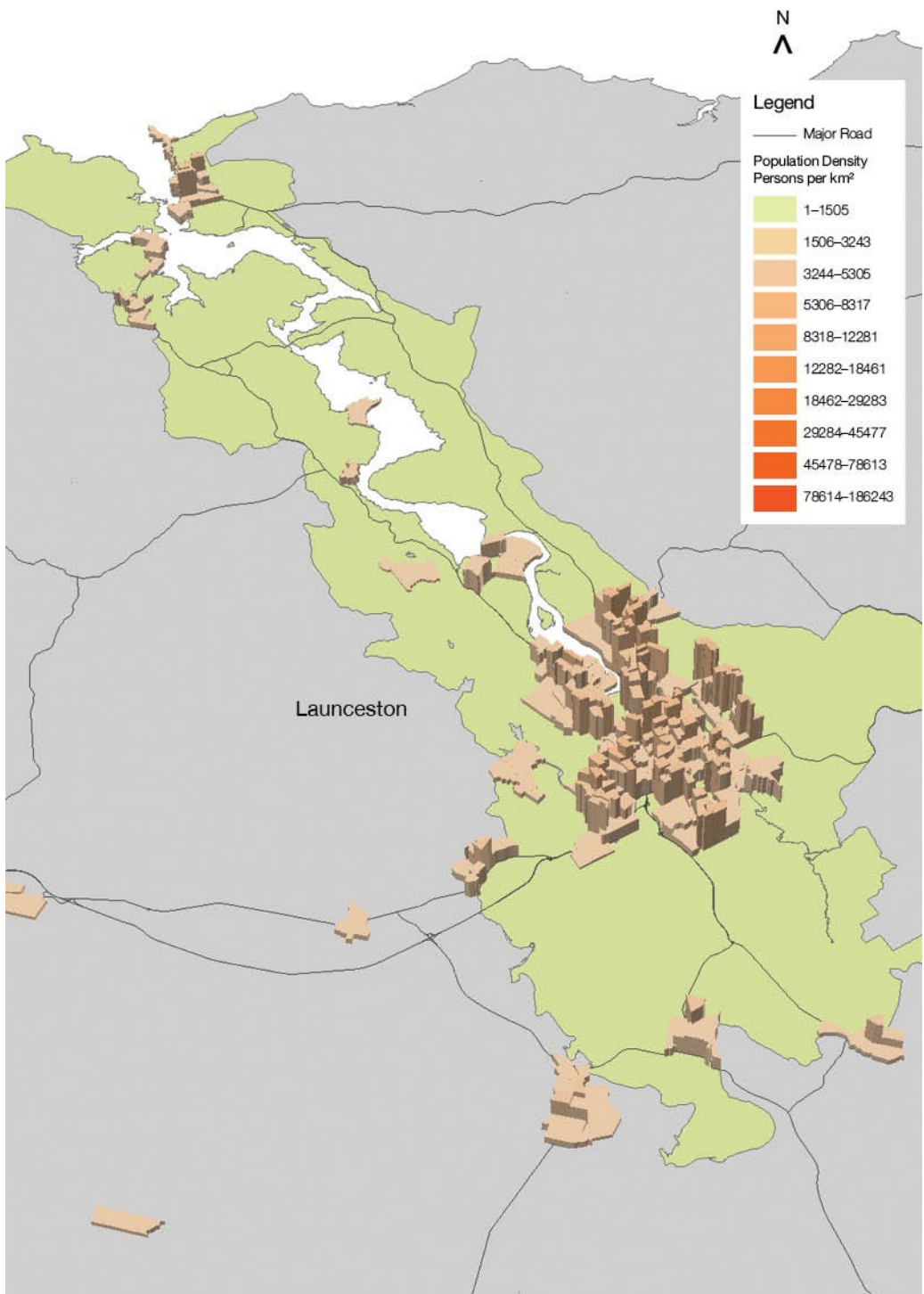




# Local Government areas in Launceston



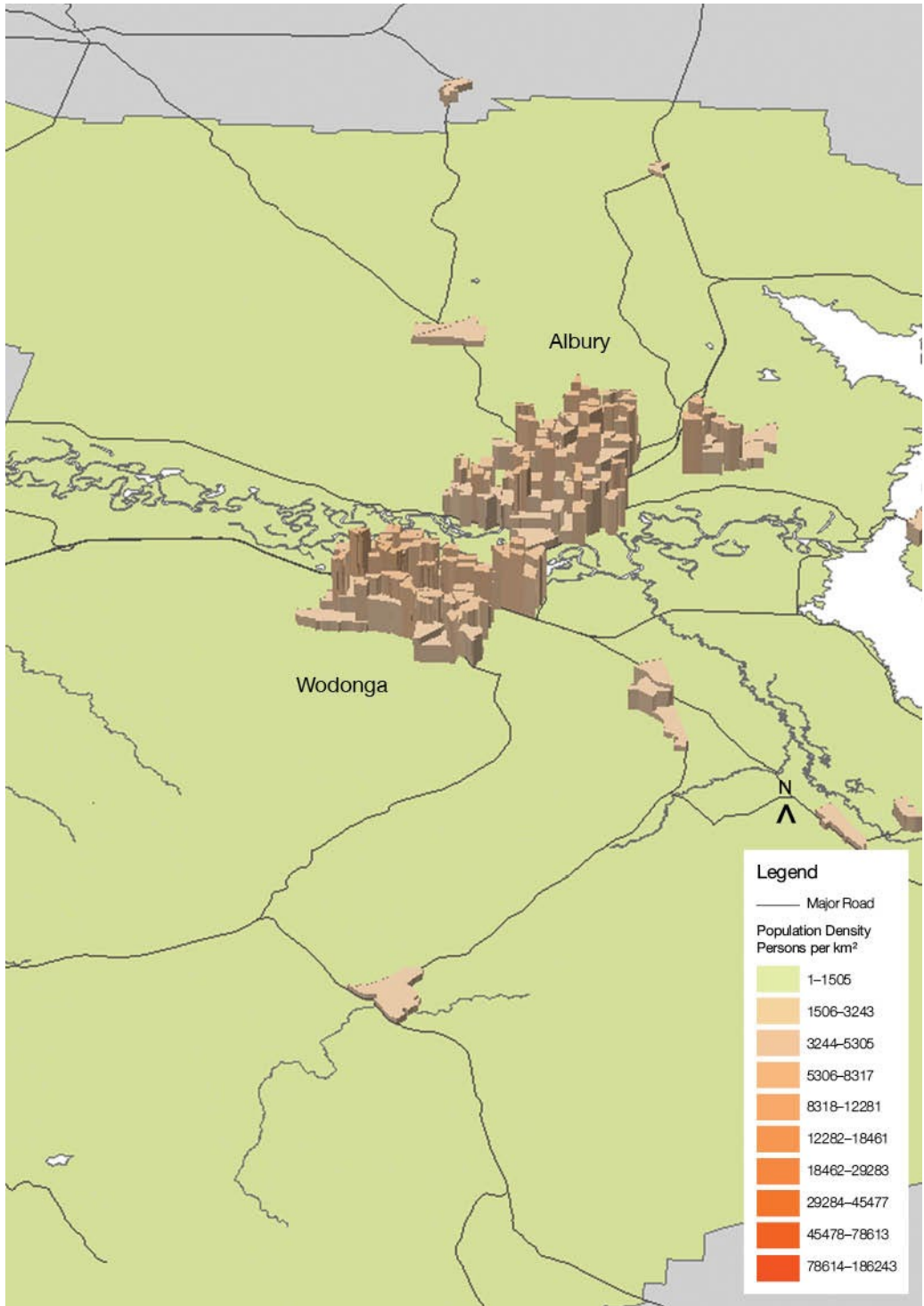
## Population density in Launceston



Local Government areas in Albury – Wodonga



## Population density in Albury – Wodonga





# Appendix B: National Urban Policy Implementation Plan

## Introduction

In May 2011, the Australian Government released *Our Cities, Our Future – a national urban policy for a productive, sustainable and liveable future* (the National Urban Policy).

The National Urban Policy is supported by a set of initiatives that contribute to delivering on its productivity, sustainability and liveability goals set out in the National Urban Policy Summary Action Plan (Chapter 7).

The Action Plan includes initiatives to be implemented over the short, medium and long term across portfolios, and this appendix reports on the progress of these initiatives.

## Productivity

### 1. Improve labour and capital productivity by:

- Aligning workforce availability and capacity to meet labour force demand
- Supporting education, research and innovation

	Initiatives	Aims	Timeframe	Progress
1.1	<i>Sustainable Population Strategy</i> (SEWPaC)	Outline the government's framework for a Sustainable Australia as a nation of sustainable communities that have the services; job and education opportunities; affordable housing; amenity; and natural environment that make them places where people want to work, live and build a future.	2011–14	The <i>Sustainable Population Strategy</i> (SPS) was released in May 2011 as a high-level policy framework that outlines the breadth of programs, policies and reforms operating across government to deliver on the aims and objectives of the SPS. Delivery on a number of specific initiatives is summarised later in this report.
1.2	<i>Trade Training Centres in Schools</i> \$2.5 billion (DIISRTE)	Give young Australians greater training opportunities and help address skills shortages.	2008–18	The first funding round of the program opened in March 2008. The summary report on the progress of the Trade Training Centres program, released in October 2012, stated that to the end of 2011: <ul style="list-style-type: none"> <li>• \$1.2 billion had been approved to fund more than 370 projects, benefiting more than 1060 schools.</li> <li>• 146 Trade Training Centres had been established and a further 88 Trade Training Centres were under construction.</li> </ul>
1.3	Building the Education Revolution (BER) \$16.2 billion (DEEWR)	Modernise schools through the delivery of necessary infrastructure and, by doing so, support local jobs and stimulate investment.	2008–12	BER funding was allocated for over 23,600 projects under three elements: <ul style="list-style-type: none"> <li>• The \$14.1 billion Primary Schools for the 21st Century element, funded 10,452 projects in 7917 schools, including new libraries, multipurpose halls, classrooms and the refurbishment of existing facilities.</li> <li>• The \$821.8 million Science and Language Centres for 21st Secondary Schools funded 537 schools to refurbish or construct new science laboratories or language learning centres.</li> <li>• The \$1.28 billion National School Pride program, funded 12,626 projects in 9461 schools, including the refurbishment of buildings and construction or upgrade of shade structures, outdoor learning areas, sporting grounds and facilities and green upgrades.</li> </ul>

Continued



	Initiatives	Aims	Timeframe	Progress
1.4	Education Investment Fund (EIF) \$4.15 billion (DIIS RTE)	Build a modern, productive, internationally competitive Australian economy by supporting world-leading, strategically-focused infrastructure investments to transform Australian tertiary education and research.	2008–12	Since 2008, four competitive EIF funding rounds have been conducted. In the 2011–2012 Budget, \$500 million was announced for a Regional Priorities Round of EIF. A two-stage application process has been conducted and successful projects will be announced soon.
1.5	<i>Powering Ideas</i> – supporting industrial transformation by helping workers and entrepreneurs move into higher, value-added activities (DIIS RTE)	Improve productivity and elevate levels of value-added industrial output through investing in innovative infrastructure; reforming university funding; investing in science and research infrastructure; boosting investment with a focus on excellence and transparency; increasing support for postgraduate research students; and improving innovation skills and workplace capabilities, particularly management and leadership skills.	2008–13	A range of initiatives have been put in place to deliver on <i>Powering Ideas</i> , including the R&D Tax Incentive, Commercialisation Australia, Super Science initiatives, the Clean Technology Program and Enterprise Connect.  The government is also carrying out a Review of Venture Capital and Entrepreneurial Skills in Australia to establish what future actions might be required in this area to help build early stage Australian companies with high growth potential.
1.6	<i>Sustainable Population Strategy</i> (SEWP aC)	Ensure that future population change is compatible with the economic, environmental and social wellbeing of Australia including improving the liveability of our urban areas.	2011–14	Underway, initiatives and actions itemised under relevant objectives.  All portfolios with responsibilities intersecting with population issues to align with the principles enshrined in the Strategy when implementing policy and program initiatives.
1.7	The \$45 million Suburban Jobs program to distribute jobs and economic opportunity into suburban areas, reducing travel demand, congestion and providing diversified economic activity (SEWP aC)	The Suburban Jobs Program aims to support local and state governments to plan for and provide enduring employment opportunities in the growing outer suburbs of our major capital cities.	2012–14	Suburban Jobs Program Guidelines were developed following a period of extensive consultation with stakeholders in 2011.  Thirty one grant applications were received between 7 December 2011 and 17 February 2012, and assessed against the Guidelines.  The University of Western Sydney, the City of Playford and the Melton City Council have been announced as the successful applicants by the Minister for Sustainability, Environment, Water, Population and Communities.

Continued

	Initiatives	Aims	Timeframe	Progress
1.8	Work with industry and others to promote opportunities for the development of specialised clusters of economic activity with high potential for interactive innovation (DIIS RTE)	Improve integration between the Australian Government and industry on the integration of skills, innovation, creativity and infrastructure.	2008–	The Enterprise Connect <i>Innovative Regions</i> drives regional entrepreneurship by supporting business clusters and networks, helping them to identify local strengths and resources (including those in local universities, training institutions and large firms) and capitalising on these combined resources to access larger markets outside their regions.
1.9	Produce spatial reports on land use and infrastructure (DIT)	Improve understanding of the economic and social dynamics of cities to underpin evidence-informed urban policy.	2011–13	Scoping underway. Reports to complement State of Australian Cities reporting.
1.10	Seek COAG support to augment planning system reforms to include city-wide economic strategies and spatially-based productivity and innovation policies (DIT)	Create efficient planning systems that drive multifactor productivity improvements.	2011–13	The Transport and Infrastructure Senior Officials Committee (TISOC) established the Cities Group in 2012 to progress the COAG cities agenda through the Standing Council on Transport and Infrastructure (SCOTI).  The TISOC Cities Group will work to deliver on the SCOTI terms of reference which include alignment with the National Urban Policy and COAG criteria for strategic planning systems.

## 2. Integrate land use and infrastructure by:

- Integrating planning of land use, social and economic infrastructure
- Investing in urban passenger transport
- Protecting corridors, sites and buffers

	Initiatives	Aims	Timeframe	Progress
2.1	\$36 billion investment in land transport infrastructure (DIT)	Support land transport infrastructure in Australia.	2009–14	Delivery on a number of specific initiatives is summarised later in this report.
2.2	Passenger rail projects in each of the mainland capital cities (\$7 billion (DIT))	Improve metropolitan rail networks in six of Australia's major cities: Sydney, Melbourne, Brisbane, Perth, Adelaide and the Gold Coast.	2009–19	<p><b>Parramatta to Epping Rail Link</b> – yet to commence. The funding commitment for the Parramatta to Epping Rail Link is available from 2014 to 2019.</p> <p><b>Noarlunga to Seaford</b> – underway. Construction is on schedule for completion in December 2012. Electrified services are expected to commence late 2013.</p> <p><b>Gawler Line</b> – track and station works completed, with discussion ongoing on the future electrification.</p> <p><b>Perth CityLink</b> – underway. Construction has commenced on the Fremantle tunnel.</p> <p><b>Moreton Bay Rail</b> – under construction. Works have begun on Kinsellas Road East bridge and approaches. Project to be completed by 2016.</p> <p><b>Regional Rail Link</b> – under construction. Works have commenced on all major work packages. The project is expected to be complete by late 2015 or early 2016.</p> <p><b>Gold Coast Rapid Transit</b> – under construction. Early works have reached practical completion. Project to be completed in 2014.</p>
2.3	Implement recommendations of the Aviation White Paper (DIT)	Give industry the certainty and incentives to plan and invest for the long term, strengthening safety and security and addressing the needs of travellers, airport users and communities affected by aviation activity.	2011–12	Underway. Refer to 2.8 for more detail.

Continued

	Initiatives	Aims	Timeframe	Progress
2.4	Moorebank Project Office established to develop an intermodal terminal on Commonwealth-owned land (DIT)	Conduct a feasibility study on the potential development of an intermodal freight terminal at Moorebank in south-western Sydney, and subject to outcomes proceed to implementation.	2012–17	The Department of Finance and Deregulation has been tasked to conduct the feasibility study. The study found that the Moorebank Intermodal Terminal would provide an efficient solution for the improved movement of container freight between Port Botany and south-west Sydney. The Australian Government committed to proceed immediately with the Moorebank intermodal project, to be operational by 2017.
2.5	<i>Funded Integrated Design Strategy</i> trial in Adelaide to promote best practice (DRALGAS)	Deliver integrated design strategy for Adelaide city and surrounds.	2010–13	The Local Government Reform Fund provided \$1.0 million for this project, which was completed in June 2012. The outcomes have been the subject of public consultation, and the South Australian Government and associated local governments are proceeding to implementation.
2.6	<i>Joint Study on Aviation Capacity in the Sydney Region</i> (DIT)	Report on short-term and long-term aviation infrastructure and supporting surface transport requirements of the Sydney region.	2012	Report released March 2012. In May 2012 the Australian Government agreed to implement 18 of the 20 recommendations. In July 2012 the Australian Government appointed technical experts and consultants for a scoping study into the suitability of the location of Wilton as a second Sydney Airport.
2.7	Implement recommendations of the <i>National Ports Strategy</i> and <i>National Land Freight Network Strategy</i> around corridor and site protection, and incorporate with COAG capital city planning systems reforms (IA, NTC, DIT)	Address issues such as best use of infrastructure; integration of port, freight and land use planning; capacity for growth; and responsiveness of infrastructure to demand. Best practice planning and management of infrastructure corridors, sites and buffers applied in city planning systems.	2011–13	The <i>National Ports Strategy</i> was endorsed by COAG in July 2012 and the implementation is being managed by IA and NTC. The <i>National Land Freight Network Strategy</i> was released by the Minister for Infrastructure and Transport in September 2012, and is awaiting COAG endorsement.
2.8	Engage with airport operators and state and local governments to better plan land use and infrastructure around airports, including public transport connections (DIT)	Better integrate airport planning and development into city and infrastructure planning.	2012–	Planning Coordination Forums (PCFs), covering 13 federally leased airports, have been established. Community Aviation Consultation Groups (CACGs), covering 19 federally leased airports, have been established.

Continued

	Initiatives	Aims	Timeframe	Progress
2.9	Progress the recommendations of the high speed rail feasibility study (DIT)	Assess feasibility of a high speed rail network on the east coast of Australia.	2011–14	The terms of reference for the study were released on 31 October 2010 by the Hon Anthony Albanese MP, the Minister for Infrastructure and Transport. On 4 August 2011, the Minister launched the report from phase 1 of the study.
2.11	Further review key transport, communication and energy corridors, sites and buffers around major cities (DIT)	Ensure that best practice planning and management of infrastructure corridors, sites and buffers, including protection of current and future uses of Commonwealth property and assets and community exposure to impacts, is integrated into city planning systems.	2011–12	Commonwealth and state transport and planning ministers considered the National Airports Safeguarding Framework on 18 May 2012. The framework represents a collective commitment from government to ensure that an appropriate balance is maintained between the social, economic and environmental needs of the community and the effective use of airport sites. It comprises an overarching principles statement, guidance material on managing impacts of aircraft noise, and five safety guidelines designed to address potential risks to aviation safety.
2.12	Apply the principles and objectives of the National Urban Policy to Nation Building 2 Program (DIT)	Ensure that the Nation Building 2 aligns with and supports national city reform agenda.	2012–	Nation Building 2 framework announced as part of the 2012–13 budget and incorporate reference to delivering on National Urban Policy goals and objectives.
2.13	Require, as a condition of funding for Nation Building 2, that each capital city to have in place by 2014 a freight strategy consistent with the <i>National Ports Strategy</i> and <i>National Land Freight Network Strategy</i> (DIT)	Ensure that Nation Building 2 aligns with and supports the national ports and freight reform agenda.	2011–	Underway.

### 3. Improve the efficiency of urban infrastructure by:

- Maximising returns on new and existing infrastructure
- Taking into account operational and maintenance costs of infrastructure and assets
- Improving the use of smart infrastructure
- Enhancing connectivity through the National Broadband Network

	Initiatives	Aims	Timeframe	Progress
3.1	Infrastructure Australia's Reform and Investment framework (IA)	Identify reforms and investments that are vital to ensure that Australia's economic infrastructure continues to support and drive the nation's economic, social and environmental success.	2008–	Infrastructure Australia has completed the <i>National Ports Strategy</i> and the <i>National Land Freight Network Strategy</i> . The 2012 Report to COAG includes the latest updates to the infrastructure National Priority List.
3.2	National Broadband Network (DBCDE & NBN Co)	A new forward-looking national high-speed communications network, based around fibre infrastructure, to improve broadband access, competition and productivity, and able to support, amongst other things, smart infrastructure, teleworking and flexible work arrangements.	2009–17	The National Broadband Network (NBN) will provide access to high speed broadband to 100 per cent of Australian premises. On 29 March 2012, NBN Co Limited (NBN Co), released its first three year national fibre rollout plan. The indicative plan lists 3.5 million homes and businesses, for which construction on the fibre network will commence, or be complete, by mid-2015. In November 2012, the NBN had more than 28,000 active connections across all three technologies, and fibre construction had commenced, or been completed, to more than 600,000 premises. NBN Co had received applications from developers to build fibre in more than 3000 locations to more than 150,000 new premises.
3.3	Co-funded with states, extensive studies on projects dealing with urban congestion in Sydney, Melbourne, Perth and Brisbane (DIT)	Look at population growth, jobs growth and commuting patterns to gain a better understanding of underlying dynamics of transport demand in major cities.	2010–12	BITRE has published reports on Perth, Melbourne and Sydney in a series of investigations into spatial changes in population, employment and commuting in our largest cities. A report on south-east Queensland is underway. These reports explore the extent to which spatial development and commuting patterns in our largest cities have been reshaped in the directions envisaged in their respective metropolitan plans.

*Continued*

	Initiatives	Aims	Timeframe	Progress
3.4	National Managed Motorways Program covering Sydney, Melbourne, Brisbane and Perth \$61.4 million (DIT)	Retrofit smart technology to improve traffic flows along congested motorways and outer city roads.	2011–15	Funding already approved for projects on the M4 in Sydney and the West Gate Freeway in Melbourne.
3.5	Provide an additional \$36 million to Infrastructure Australia to boost its strategic capacity and deepen the National Priority List (DIT & IA)	Support ongoing provision of infrastructure reform and expenditure advice to the Australian Government.	2010–11	Additional funds were provided to Infrastructure Australia in the 2011–12 Budget. Infrastructure Australia is now assessing proposals seeking funding support from the Nation Building II program and the Regional Infrastructure Fund in addition to the Building Australia Fund.
3.6	Consider establishing a private sector working group to develop strategies to further private and superannuation sector investment in nationally significant infrastructure (IA)	Increase private investment in infrastructure projects.	2011–14	The Infrastructure Finance Working Group was established in 2011 and the report <i>Infrastructure Finance and Funding Reform</i> released in June 2012. Relevant agencies are identifying options for implementation of its recommendations.
3.7	Work with states and territories to finalise the <i>National Ports Strategy</i> and implementation plan by August 2011 (IA)	Improve productivity, facilitate better long-term planning around ports and provide greater focus on performance of Australia's waterfront international gateways.	2011–14	Draft strategy was released in December 2010 and endorsed by COAG. Implementation of the strategy was endorsed by COAG in July 2012.
3.8	Continue to encourage best practice delivery of public private partnerships (PPPs) by the states and territories in infrastructure procurement where these provide value for money (IA)	Apply IA best practice PPP Guidelines in jurisdictions.	2011–14	The National PPP Working Group is developing options for refinement of National PPP Guidelines on discount rate methodology.

Continued



	Initiatives	Aims	Timeframe	Progress
3.9	Implement governance reforms to enhance transparency in infrastructure planning, including a National Construction Schedule and post-build evaluation framework (IA)	Create a comprehensive schedule that details all large economic and social infrastructure projects to create greater certainty for industry and increased competition.	2012–	The National Infrastructure and Construction Schedule (NICS) was delivered with the support and input of States and Territories in 2012 and is ongoing.
3.10	Implement a new tax incentive linked to the National Priority List to encourage private sector investment in priority infrastructure (DIT, IA & Treasury)	Establish special tax provisions to improve certainty for private sector investment in nationally significant projects.	2011–14	The Australian Government is moving to finalise the draft legislation for public exposure before the end of the year.
3.11	<i>Digital Education Revolution</i> (DER) (DEEWR)	Contribute to sustainable and meaningful change to teaching and learning in Australian schools that will prepare students for further education and training and enable them to live and work in a digital world.	2008–12	<p>The Government is investing over \$2.1 billion to support the effective integration of information and communication technology (ICT) in schools in line with the Government's broader education initiatives, including the national Curriculum.</p> <ul style="list-style-type: none"> <li>• The Department of Education, Employment and Workplace Relations is working closely with the Department of Broadband, Communications and the Digital Economy and schools authorities to ensure that the bandwidth needs of schools are understood through the progressive NBN rollout process.</li> <li>• In August 2012 the the Australian Government announced the successful pilot programs in the National Broadband Enabled Education and Skills Services Program. The pilot program will enable primary schools, high schools and universities to participate in 12 online education and training projects linked by the NBN.</li> </ul>

## Sustainability

### 4. Protect and sustain our natural and built environments by:

- Protecting and enhancing natural ecosystems
- Supporting sustainable development and refurbishment of our built environment

	Initiatives	Aims	Timeframe	Progress
4.1	Working with the community, Governments and industry to manage our natural resources through the <i>Caring for our Country Program</i> . (SEWPaC)	Achieve an environment that is healthy, better protected, well-managed, resilient and provides essential ecosystem services in a changing climate.	First Phase 2008–2013  Second Phase 2013–2018	<p>The first phase of the program invested over \$2 billion across six priority areas:</p> <ul style="list-style-type: none"> <li>• National Reserve System;</li> <li>• Biodiversity and natural icons;</li> <li>• Coastal environments and critical aquatic habitats;</li> <li>• Sustainable farm practices;</li> <li>• Natural resource management in northern and remote Australia;</li> <li>• Community skills, knowledge and engagement.</li> </ul> <p>Phase one is in its final year and the <i>Caring for our Country 2008–13 Achievements Report</i> is scheduled for release by June 2013.</p> <p>The second phase was approved in the 2012–13 Budget process. Consultations on the design of the second phase of <i>Caring for our Country</i> were undertaken from 21 June to 15 August 2012.</p>
4.2	Protect internationally significant species and areas through the application of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (SEWPaC)	Increase environment and heritage protection and biodiversity conservation.	1999–	It is expected that amendments to the Act to implement the government response to the report of independent review of EPBC Act will be introduced to Parliament shortly.

*Continued*

	Initiatives	Aims	Timeframe	Progress
4.3	Improving the efficiency of new buildings and major renovations through the <i>Building Code of Australia and Building Energy Efficiency Disclosure Act</i> (DCCEE)	Subject to a positive cost benefit analysis, improve the energy efficiency of Australian buildings.	2010–12	<p>The <i>Building Code of Australia</i> was amended in 2010 to increase the energy efficiency standard for residential buildings from five to six stars and to incorporate new standards for hot water systems and lighting. The standards for non-residential buildings were also increased.</p> <p>The <i>Building Energy Efficiency Disclosure Act 2010</i> came into effect in November 2010 and full disclosure has been mandatory under the Act since November 2011. More than 1200 Building Energy Efficiency Certificates were issued in the first year of full mandatory disclosure for commercial offices &gt;2000 m<sup>2</sup> in area and these can be viewed publicly at <a href="http://www.cbd.gov.au">www.cbd.gov.au</a>. There are now more than 200 accredited assessors Australia-wide.</p>
4.4	Infrastructure Australia and Infrastructure Working Group to advise on strategies to maximise existing infrastructure assets and improve efficiency in transport, energy and water (IA)	Deliver improved energy and water efficiency in infrastructure.	2011–14	Infrastructure Australia released the <i>Efficiencies in Major Infrastructure Procurement</i> report in July 2012.
4.5	Invest \$29.2 million in the <i>Sustainable Regional Development</i> initiative. (SEWPaC)	Support better sustainability planning in regions that are experiencing high growth.	2011–14	<p>The Lower Hunter region is the first region to be included in this national program and the Australian Government is also working with the Queensland Government on regional sustainability planning and the Great Barrier Reef comprehensive strategic assessment.</p> <p>The Australian Government will be inviting other states and territories to nominate regions for inclusion in the program over the coming months.</p>
4.6	Invest an additional \$8m over two years for community based heritage projects to manage and conserve important heritage places, including provision to assist in the recovery from natural disasters such as floods, fire and storms. The program will include the existing National Historic Sites program. (SEWPaC)	Better protection and conservation measures of Australia's most significant historic national heritage; honour eminent Australians who have made a significant contribution to our nation; assist communities to tell their heritage stories; and enhance community engagement in heritage through celebrations and events.	2011–14	<p><i>Your Community Heritage</i> was announced by Minister Burke in May 2011.</p> <p><i>Your Community Heritage</i> is a new approach to supporting and protecting Australia's heritage that will enable local communities around Australia to celebrate their local heritage.</p> <p>235 projects received funding in 2011/12 under <i>Your Community Heritage</i>. The 2012/13 funding round is expected to open later in 2012 (or early 2013).</p>

## 5. Reduce greenhouse gas emissions and improve air quality by:

- Supporting low emission technologies
- Putting a price on carbon and facilitating regulatory reform

	Initiatives	Aims	Timeframe	Progress
5.1	Implement pricing and energy efficiency mechanisms for cost effective greenhouse gas emission reductions (DCCEE)	Use a market-based tool to drive economy-wide greenhouse gas reductions, energy efficiency and investment in renewable energy sources.	2011–13	The carbon pricing mechanism has been legislated and commenced on 1 July 2012. After an initial fixed-price period, a full emissions trading system is proposed to commence in 2015.
5.2	Support research and development of low emissions technologies, including Solar Cities, Smart Grid technology (DCCEE)	Enhance the efficiency of the nation's power grid and reduce household energy bills through increased use of solar energy; exert downward pressure on electricity prices by deferring electricity infrastructure upgrades; and increase the uptake of solar energy.	2011–14	<p>The <i>Solar Cities Program</i> is a \$94m commitment to trial a range of energy efficiency initiatives across seven consortia throughout Australia. The program is due to finish on 30 June 2013 and during the final 12 months the Department will be analysing the energy data collected in conjunction with the CSIRO which is the senior research partner.</p> <p>In October 2012, the Solar Cities Program hosted a conference at the Brisbane Convention Centre, <i>Solar Cities Australia 2012</i>, on the results identified thus far in the program. Energy efficiency trials conducted include the use of solar PV, white roofs, home energy assessments, in-home-displays and smart meters and peak demand pricing trials.</p>
5.3	<i>Green Vehicle Guide</i> website and mandatory fuel consumption labelling (DIT)	Enable consumers to continue to compare the relative environmental performance of new vehicles to improve the environmental performance of vehicles.	2012–	The <i>Green Vehicle Guide</i> was launched in 2004 and the requirement to affix a fuel consumption label to new vehicles was introduced in 2008. Both measures provide information about fuel consumption and CO <sub>2</sub> emissions of new vehicles. Having access to information about the environmental performance of new cars allows consumers to make better informed choices when purchasing new vehicles.
5.4	Air pollution standards for light and heavy vehicles in Australia (DIT)	Reduce adverse health impacts of pollution from light and heavy vehicles.	2011–	<p>The government has a long-standing policy of introducing increasingly stringent air pollution standards for light and heavy vehicles, in line with developments in technology and international standards.</p> <p>In 2011, the Government announced a move to more stringent standards (Euro 5) to reduce air pollution from light vehicles. The regulation applies from 1 November 2013 for new models and from 1 November 2016 for all models.</p>

Continued

	Initiatives	Aims	Timeframe	Progress
5.5	Introduce a carbon price from July 2012 (DCCEE)	Reduce Australia's greenhouse gas emissions and support the development of an effective global response to climate change.	2012–	Parliament passed the Clean Energy Legislative Package in late 2011. The carbon pricing mechanism commenced on 1 July 2012.
5.6	Investigate travel demand management policies, including fringe benefits tax, road pricing, transit lanes, telecommuting and flexible work arrangements (IA)	Ensure more efficient use of land transport infrastructure and reduction of transport-related emissions and pollution.	2012	Under the 2011–12 Budget, the vehicle fringe benefits tax was reduced to a single statutory rate of 20 per cent. Infrastructure Australia released its report on Private Financing Options for Upgrades in the M5 and F3–M2 Corridors in Sydney in July 2012. The Australian Government promoted teleworking through a November 2012 campaign.
5.7	Continue to support research and development of low emissions technology (DIIS RTE)	Ensure that innovative emission-reducing technologies are widely adopted by the Australian automotive industry.	2011–14	The government has a number of initiatives in place to support the development of low emissions technology across industry, including the R&D Tax Incentive and the Clean Technology Innovation Program (CTINNP). The CTINNP was launched in July 2012 to support applied R&D, proof of concept and early stage commercialisation activities to develop new clean technologies and associated services that reduce greenhouse gas emissions. Applications can be submitted at any time. Since its establishment in 2008 the <i>New Car Plan for a Greener Future</i> has supported the development of low-emissions technologies including the production of proof-of-concept electric Holden Commodores, more efficient vehicle batteries and fuel-efficient direct injection engines. Co-investment under the <i>New Car Plan</i> resulted in the development of the four-cylinder, turbo-charged EcoBoost engine by Ford, the local manufacture of the Hybrid Camry by Toyota, and the production of the fuel-efficient Cruze small car by Holden. The government provided \$26 million to the Automotive Cooperation Research Centre (CRC) in November 2011. Guided by the <i>AA2020 Automotive Technology Roadmap</i> , released in August 2010, the CRC will develop and commercialise low emission automotive technologies.
5.8	Introduce mandatory CO <sub>2</sub> emissions standards for light vehicles (DIT)	Reduce the carbon emissions from light vehicles in Australia.	2010–15	The Department of Infrastructure and Transport is in the process of developing CO <sub>2</sub> emissions standards for light vehicles. This work includes extensive consultation with stakeholders.

Continued

	Initiatives	Aims	Timeframe	Progress
5.9	<i>Tax Breaks for Green Buildings policy</i> (DCCEE)	Achieve a significant improvement in the energy performance of existing commercial buildings.	N/A	As part of the 2012–13 Budget, the government decided not to proceed with this program.
5.10	Monitor progress towards achieving 20 per cent renewable energy by 2020 (DCCEE)	Increase investment in and contribution of renewable energy resources.	2010–20	<p>In 2009, the Government expanded the Renewable Energy Target (RET) which will ensure 20 per cent of Australia's electricity comes from renewable sources by 2020.</p> <p>The RET Scheme legislation specifies the amount of renewable energy to be generated by renewable energy power stations, for every year up to 2030.</p> <p>Since 2001 the annual targets have been met. The Climate Change Authority is currently undertaking an independent statutory review of the RET Scheme. Among other things, this is looking at how Australia is tracking towards the 2020 target.</p>

6. Manage our resources sustainably by:
- Reducing resource consumption and waste
  - Improving water, energy and food security

	Initiatives	Aims	Timeframe	Progress
6.1	Implement the <i>Water for the Future</i> program and COAG urban water reforms (SEWPaC)	To increase urban and rural water use efficiency.	2010–	Water efficiency and security in many cities and towns has improved, with Australian Government funding of over \$1.5 billion in research and infrastructure investments, including water recycling, stormwater harvesting and desalination projects.  Residential water efficiency is also promoted through the national implementation of the Water Efficiency Labelling and Standards scheme.
6.2	Implement the <i>National Waste Policy: Less waste, more resources</i> , to set the direction of the nation's waste management and resource recovery (SEWPaC)	National coordinated action to reduce waste.	2010–	The <i>National Waste Policy Implementation Report 2011</i> was released in June 2012. The results showcase the clear benefits of a collaborative approach across government and industry.  Highlights include: <ul style="list-style-type: none"> <li>The <i>Product Stewardship Act 2011</i> came into effect on 8 August 2011, delivering on a key commitment by the Australian Government under Strategy 1 of the National Waste Policy.</li> <li>The Product Stewardship (Televisions and Computers) Regulations 2011 commenced on 8 November 2011.</li> <li>FluoroCycle commenced on 21 July 2010.</li> <li>Australian environment ministers agreed to the Australian Packaging Covenant on 1 July 2010.</li> </ul>
6.3	Further strengthen the role for Infrastructure Australia in undertaking cost–benefit analysis of proposals for infrastructure funding that includes consideration of better use of water and energy in infrastructure (DIT)	Broaden use of cost–benefit analysis that incorporates externalities.	2011–14	Under the 2011–12 Budget, Infrastructure Australia's funding was increased by nearly 40 per cent to \$36 million over four years.



7. Increase resilience to climate change, emergency events and natural hazards by:

- Mitigating risks and adapting to change
- Incorporating climate change risks into infrastructure siting, design, construction and operation

	Initiatives	Aims	Timeframe	Progress
7.1	Australian Climate Change Science Program (ACCSP) (DCCEE)	To improve our understanding of the causes, nature, timing and consequences of climate change so that industry, community and government decisions can be better informed.	1989–13	The ACCSP has been running continuously since 1989. Research outcomes are published in peer-reviewed journals and contribute to reports such as the <i>Intergovernmental Panel on Climate Change Fifth Assessment Report</i> (due 2013–14). Information about the ACCSP, including annual reports of research conducted, is provided on the DCCEE and CSIRO websites.
7.2	National Strategy for Disaster Resilience (AG)	To provide high-level direction and guidance on how to achieve disaster resilient communities across Australia. The strategy includes steps to identify: <ul style="list-style-type: none"> <li>• responsible land use planning to reduce the likelihood of hazards impacting communities; and</li> <li>• building standards to mitigate the likelihood of loss of life, as well as damage to and/or destruction of property and infrastructure.</li> </ul>	2011–	In June 2012 the Standing Council on Police and Emergency Management considered the <i>Enhancing Disaster Resilience in the Built Environment Roadmap</i> to improve the consideration of natural disaster hazards in land use planning and building code regulation.  The Roadmap sets out a range of immediate and medium term activities to enhance disaster resilience in the built environment and identifies seven key areas for improvement: integrated legislation; process enhancements; comprehensive data and mapping; collaborative vendor disclosure; governance partnerships; lifelong education and training; and inter-jurisdictional collaboration.  Ministers noted that successful implementation will lead to significant long term improvements to the resilience of Australian towns and cities.
7.3	Work with states and territories to develop guidance, including spatial mapping, to help reduce exposure of urban assets and infrastructure to climate change risks (DCCEE)	Develop nationally consistent approaches to data management and risk assessment methodologies, for consideration through COAG.	2011–14	On 16 November 2012 the Select Council on Climate Change agreed a coastal adaptation work plan that includes developing a coastal climate change knowledge strategy by 31 May 2013. The Adaptation Working Group is currently developing advice for the Select Council on Climate Change on which of the remaining national adaptation priorities require work plans.
7.4	Strengthen the role for Infrastructure Australia in undertaking assessments of infrastructure to consider whether proposals adequately deal with risk of climate change impacts (IA)	Improve standard of major infrastructure proposals submitted to IA to address climate change adaptation and mitigation.	2011–14	Infrastructure Australia is consulting with the Australian Green Infrastructure Council and reviewing whether their Infrastructure Sustainability assessment tool and/or ratings could be adopted for the purposes of project assessments.

## Liveability

### 8. Facilitate the supply of appropriate mixed income housing by:

- Encouraging a range of housing types to suit diverse household needs across metropolitan areas
- Facilitating suitable accommodation for older people:

	Initiatives	Aims	Timeframe	Progress
8.1	Social Housing Initiative (SHI) to build 19,300 new social housing dwellings and repair or upgrade 80,000 homes \$5.6 billion (FaHCSIA)	Assess SHI dwellings for their proximity to services and amenities that are relevant to tenants' needs, such as transport, schools, shops, health services and employment opportunities. Assess dwellings for environmental sustainability. Reduce concentrations of disadvantage by creating mixed communities to improve social inclusion.	2008– 2012	At the end of May 2012, assessments of over 90 per cent of new social housing dwellings had been completed. The remainder of the program is due for completion by the end of 2012.  Repairs and maintenance were undertaken on over 80,000 existing social housing dwellings. Over 12,000 of these would have been uninhabitable without this work. All repairs and maintenance projects were completed by June 2011.
8.2	<i>National Affordable Housing Agreement</i> (NAHA) \$6.2 billion (FaHCSIA)	Give all Australians access to affordable, safe and sustainable housing that contributes to social and economic participation.	2009–2014	The NAHA provides the framework for the Commonwealth and states and territories to work together to improve housing affordability and homelessness outcomes for Australians. The <i>NAHA Performance Report: 2010–11</i> was released in June 2012.
8.3	<i>National Disability Strategy</i> to meet the diverse needs of people with disability and their carers (FaHCSIA)	Guide government activity to improve outcomes for people with disability, their families and their carers.	2011–21	The <i>National Disability Strategy</i> was formally endorsed by COAG on 13 February 2011 and launched by the Australian Government on 18 March 2011.  The Australian Government has been working in conjunction with state and territory governments to prepare a national action framework for implementing and evaluating the strategy. A first report on the strategy will be presented to COAG shortly.
8.4	<i>National Partnership Agreement on Homelessness</i> (NPAH) \$1.1 billion, together with the states and territories (FaHCSIA)	Provide new and better integrated accommodation and support services for homeless people.	2009–2013	At 31 March 2012, 400 new dwellings across Australia for individuals and families experiencing homelessness had been completed under the <i>A Place to Call Home</i> initiative of the NPAH.  In relation to support services, a total of 240,000 instances of assistance have been provided to people who are homeless or at risk of homelessness since the NPAH commenced in 2009.

Continued

	Initiatives	Aims	Timeframe	Progress
8.5	<i>National Partnership Agreement on Social Housing</i> \$400 million (FaHCSIA)	Build new social housing dwellings. Adherence to universal design standards is encouraged as one of five additional criteria for proposed social housing projects.	2008–2012	Under the <i>National Partnership Agreement on Social Housing</i> , over 1900 new social housing dwellings will be built. At the end of May 2012, over 93 per cent of dwellings had been completed. The remainder of the program is due for completion by the end of 2012.
8.6	Ensure Australian Government social housing outlays are consistent with objectives of the National Urban Policy, with a focus on supplying a mix of appropriate, adaptable housing located close to city centres and public transport (FaHCSIA)	Align housing infrastructure outlays with National Urban Policy.	2011–14	Stage 2 of the Social Housing Initiative set baselines for the distance of dwellings from services and transport. Over 12,000 dwellings had to be less than 1 kilometre from the nearest business district and over 6,000 had to be within 200 metres of transport. To date these baselines are being met.
8.7	Examine opportunities for reform through the COAG Housing Supply and Affordability Reform agenda (Treasury)	Examine the housing supply pipeline and government policies that may act as barriers to supply or that stimulate demand for housing, in particular focussing on land supply, infrastructure cost recovery, and land-use planning and approval processes.	2010–12	COAG agreed to the recommendations of the Housing Supply and Affordability Reform (HSAR) Working Party. The HSAR report was published on the COAG website on 30 August 2012.
8.8	Ensure housing assistance is adequate, targets those in need and supports participation incentives (FaHCSIA)	Provide adequate housing assistance.	2011–14	<p>The Henry Tax Review recommended that Commonwealth Rent Assistance be:</p> <ul style="list-style-type: none"> <li>increased and indexed in line with rents paid</li> <li>made into a separate income support payment, with eligibility based on income and rent, to improve targeting</li> <li>extended to public housing tenants, with recipients paying rents reflecting market rates, subject to gradual transitional arrangements</li> <li>supplemented with a high-need housing payment for providers with tenants with high/special housing needs or who face discrimination in private market.</li> </ul> <p>The government is currently considering these recommendations.</p>

Continued

	Initiatives	Aims	Timeframe	Progress
8.9	Ensure that social housing programs support the age-friendly objectives of the National Urban Policy, including progressively increasing the supply of adaptable housing that is built to universal design standards to ensure access for the elderly and people with disabilities (FaHCSIA)	Support the delivery of high-quality accessible dwellings.	2011–14	Stage 2 of the Social Housing Initiative set baselines for dwellings meeting minimum universal design elements to make properties more accessible to people who are ageing or live with disability. These baselines are being met, with over 15,000 dwellings meeting universal design principles.
8.10	Encourage ageing in place, including through adaptable and accessible housing requirements; encourage socially inclusive housing that is integrated with surrounding community facilities (DoHA)	Support the incorporation of planning for aged care residences and facilities throughout the urban planning process, giving immediate priority to aged care developments being integrated into urban areas. Revise planning process for future urban planning to include assessments for a full continuum of housing for ageing Australians.	2011–14 For inclusion in 2012 Aged Care Approvals Round	Over the next 10 years the government will significantly increase the number of aged care services across Australia, including by providing more than 65,200 new residential aged care places by 2021–22, on top of the 191,500 residential places currently available. New aged care places, as they become available, are all allocated through the competitive process called the Aged Care Approvals Round (ACAR). This competitive process takes into account local aged care needs in a given region and will see significant numbers of new residential aged care services being made available for older Australians over the coming decade.
8.11	Examine the extent to which the housing market is meeting demand for a range of housing types that suit diverse household needs (Treasury)	Identify and analyse the balance between housing demand and supply, and the implications for housing affordability.	2008–	The National Housing Supply Council's annual State of Supply Reports aggregate and assess information from all levels of government and the private sector on the supply and demand for housing.

## 9. Support affordable living choices by:

- Facilitating compact mixed use development in appropriate locations
- Supporting equitable distribution of employment, facilities and services

	Initiatives	Aims	Timeframe	Progress
9.1	National Rental Affordability Scheme (NRAS) (FaHCSIA)	Increase the supply of new affordable rental housing, reduce rental costs for low and moderate income households and encourage large-scale investment and innovative delivery of affordable housing.	2008–	New dwellings continue to be delivered into the program. At 31 May 2012, 8,424 NRAS dwellings were tenanted or available for rent. A further 32,126 are due to be delivered by 2015–16.  Participation in the program by not-for-profit and for-profit organisations remains strong and stakeholders are keenly anticipating the allocation of remaining NRAS incentives, of which there are around 10,000.
9.2	Liveable Cities program \$20 million  Macquarie Point redevelopment \$50 million (DIT)	Improve the capacity of the 18 capital and major regional cities to undertake strategic planning. Support the development of demonstration projects that facilitate urban renewal and strategic urban development and encourage partnerships between all levels of government to foster innovative solutions.	2012–14	In April 2012 the Minister for Infrastructure and Transport, approved funding for 25 projects –18 planning and design and seven demonstration projects.  Agreements are being put in place with successful proponents, with a number of projects now well underway.  In June 2012 the Australian Government entered into an agreement with the State of Tasmania to contribute \$50 million to remediate land at Macquarie Point Hobart for the purpose of facilitating redevelopment of the land, consistent with National Urban Policy goals and objectives.
9.3	Consider best use of Commonwealth-owned land to support the supply of housing; improve community amenity and jobs creation through Commonwealth Property Disposals Policy (CPDP) (Finance)	Demonstrate best practice in disposal of Commonwealth-owned land and assets to support objectives and criteria of National Urban Policy and COAG city reforms.	2014–17	The Australian Government undertakes an annual Land Audit of Commonwealth Properties which aims to identify surplus Commonwealth land available for disposal under the CPDP.  Since 2007, the Australian Government has agreed to 61 Commonwealth land transactions totalling an estimated area of 8253 hectares. Several of these transactions have resulted in an increase in the supply of housing, including a range of different dwelling types and affordable housing; community amenity; and job creation.

## 10. Improve accessibility and reduce dependence on private motor vehicles by:

- Improving transport options through active and public transport
- Reducing travel demand

	Initiatives	Aims	Timeframe	Progress
10.1	<i>Economic Stimulus Plan, National Bike Paths Projects</i> \$40 million (DRALGAS)	Support and create jobs and improve skills as part of the Jobs Fund by funding projects that build community infrastructure and create social capital in local communities.	2008–13 (Fund completely allocated)	The National Bike Path Projects provided funding of \$40 million for 166 projects, of which 155 have been completed. This provided approximately 600 kilometres of new and upgraded bike paths and associated infrastructure, as well as supporting up to 1875 jobs in local communities across Australia.
10.2	<i>National Cycling Strategy</i> (DIT)	Double the number of cyclists between 2011–2016.	2011–16	The 2011 National Cycling Participation Survey found that 17.8 per cent of the population or more than four million Australians ride a bicycle in a typical week. An implementation report has now been released by AUSROADS.
10.3	Monitor and report on progress towards achieving national cycling target to double number of cyclists by 2016 (DIT)	Ensure that policy and associated actions are evaluated and effective in progressively meeting target.	2011–16	The Australian Bicycle Council prepared a benchmark report on 2011 cycling participation from a survey of 10,000 households around Australia. The survey will be repeated in 2013 and 2015 to track progress against the target. A 2012 implementation report has also been released.
10.4	Incorporate active travel into the Department of Infrastructure and Transport portfolio (DIT)	Ensure that infrastructure needs of pedestrians and cyclists are mainstream departmental activities.	2011–17	<i>Walking, Riding, and Access to Public Transport</i> , a draft report for discussion, was released in October 2012.  The paper explores how the Australian Government can work with other levels of government, businesses and the community to encourage and support walking and riding as part of the transport systems in each of Australia's cities and towns.
10.5	Work with state and territory governments to improve accessibility and mobility in cities, including more compact and mixed-use development, improved public transport and active transport options, and more efficient use of infrastructure assets (DIT)	Enable more efficient movement of people and goods.	2011–17	The Transport and Infrastructure Senior Officials Committee (TISOC) Cities Group has been established to deliver on the Standing Council on Transport and Infrastructure's objective to achieve a co-ordinated and integrated national transport and infrastructure system that is efficient, safe, sustainable, accessible and competitive.  The Cities Work Plan was approved by SCOTI in November 2012.
10.6	Implement urban-related recommendations from the Tax Summit (DIT)	More efficient use of land transport infrastructure, and reduction of transport-related emissions and pollution.	2011–14	Infrastructure Australia continues to promote the implementation of the transport-related tax reforms, particularly those that would replace taxation measures with user charging.

## 11. Support community wellbeing by:

- Providing access to social and economic opportunity
- Improving the quality of the public domain
- Improving public health outcomes

	Initiatives	Aims	Timeframe	Progress
11.1	Australian National Preventive Health Agency (ANPHA) established (DoHA)	Promote and guide the development, application, integration and review of public, organisational and community-based prevention and health promotion policies.	2011–16	ANPHA, as an inter-jurisdictional agency, was established on 1 January 2011 to meet the challenges of obesity (including physical inactivity), harmful alcohol consumption and tobacco.  ANPHA is working with the Infrastructure and Transport portfolio to consider the relationship between health and the built environment.
11.2	<i>National Compact with the Third Sector</i> – a high-level, aspiration-based agreement (FaHCSIA)	Strengthen the not-for-profit sector to provide support for people in need. Set out how government and the sector want to work together in new and better ways to improve the lives of Australians.	2008–	FaHCSIA is committed to supporting the principles of the National Compact and, through improvements to our program business model, significant progress continues to be made to reduce the administrative burden on organisations.  FaHCSIA is currently undertaking a review that aims to enhance relationships with not-for-profit organisations and reduce their reporting burden.
11.3	Regional Local Community Infrastructure Program (RLCIP) (DRALGAS)	Support local jobs and provide long-term benefits to communities by assisting councils to build and modernise local infrastructure.	2008–2011	In 2010–11 the Department for Regional Australia, Local Government, Arts and Sport administered \$312.7 million relating to 1,428 projects under the \$1.1 billion RLCIP. Final funding agreements were established for the last round of the RLCIP relating to over 6,200 projects that meet infrastructure needs identified by local councils.
11.4	Healthy Spaces and Places (HSP) – A national guide to designing places for healthy living (DoHA)	Encourage healthy living and support inclusion through the built environments where Australian people live, work and play.	2010	The HSP project involved the development and promotion of a web-based national planning guide with practical tools, case studies and guidelines to assist planning and design practitioners to incorporate active living principles into the built environment.
11.5	Develop an Australian Urban Design Protocol and support best practice with industry practitioners (DIT)	Strengthen and support COAG city planning reform criterion 8: 'To encourage best practice urban design and architecture'.	2011–12	<i>Creating Places for People</i> was launched in November 2011. It is a collaborative commitment to best practice urban design in Australia.  The protocol provides broad principles for urban design that take into account the unique characteristics of a location and people's enjoyment, experience and health, and encourages excellence and collaboration in the design and custodianship of urban places.

Continued



	Initiatives	Aims	Timeframe	Progress
11.6	<i>National Partnership Agreement on Preventative Health</i> (NPAPH), including the Healthy Communities grants program. (DoHA)	Directly fund local governments to deliver programs and activities that seek to reduce the prevalence of overweight, obesity and lifestyle-related chronic disease.	To 2013	<p>Healthy Communities provides 92 grants to Local Government Areas across Australia to implement a range of healthy lifestyle programs and activities with a particular focus on adults predominantly not in the paid workforce. Grants have been rolled out across three phases and all projects have now commenced.</p> <p>Healthy Communities is supported by six funded National Program Grants to expand the delivery of proven and effective healthy lifestyle programs in every state and territory and develop a Healthy Communities Quality Framework, which includes, for example, consideration of physical environments that encourage exercise as part of normal daily activities.</p>

## Governance

### 12. Improve the planning and management of our cities by:

- Facilitating a whole-of-governments approach and commitment to cities and regions
- Integrating planning systems, infrastructure delivery and management
- Encouraging best practice governance and applying the principle of subsidiarity

	Initiatives	Aims	Timeframe	Progress
12.1	COAG capital city strategic planning systems reform process to have long-term strategic plans by January 2012 (COAG)	Ensure that Australian cities are globally competitive, productive, sustainable, liveable and socially inclusive and are well placed to meet future challenges and growth.	2009–12	The COAG Reform Council Review of capital city strategic planning systems report was released to governments in December 2011 and to the public in April 2012.  All governments actively participated in the review, but no city strategic planning system was wholly consistent with all COAG criteria. COAG agreed to continued intergovernmental collaboration and that further work on cities would be taken forward by the COAG Standing Council on Transport and Infrastructure.
12.2	Ensure that Commonwealth policies, investment and other activities across government: <ul style="list-style-type: none"> <li>• meet the principles and objectives of the National Urban Policy and COAG reforms</li> <li>• co-ordinate across Australian Government agencies</li> <li>• co-operate and partner with state and local governments, businesses and the community.</li> </ul> (DIT)	Demonstrate best practice in Australian Government policies, activities, assets and investments towards meeting the objectives of the National Urban Policy and COAG city reforms.	2011–14	The Department of Infrastructure and Transport is continually engaged with stakeholders from across governments, business and the community to achieve the principles and objectives of the National Urban Policy.  To assist in meeting the principles and objectives of the National Urban Policy, the Department has also convened: <ul style="list-style-type: none"> <li>• the Commonwealth Group on Cities to achieve co-ordination across Commonwealth agencies</li> <li>• the TISOC Cities Group to encourage governments to continue to share examples of best practice in strategic city planning to support ongoing national improvement in line with the recommendations of the COAG Reform Council's <i>Review of capital city strategic planning systems</i></li> <li>• the Urban Policy Forum to maintain constructive engagement with stakeholders that are not formally linked into COAG, including representatives from business and the community.</li> </ul>

Continued

	Initiatives	Aims	Timeframe	Progress
12.3	Seek support of states and local governments, through COAG, to expand the use of national criteria for capital city strategic planning systems to planning of regional major cities (DIT)	Implement best practice strategic planning to benefit all major cities.	2011–14	<p>The Transport and Infrastructure Senior Officials Committee (TISOC) has established the TISOC Cities Group to progress the COAG cities agenda through the Standing Council on Transport and Infrastructure (SCOTI).</p> <p>Membership includes representatives from all Australian states and territories and the Australian Local Government Association.</p> <p>The Liveable Cities Program has supported a number of regional cities to improve their strategic planning in accordance with the COAG criteria.</p>

### 13. Streamline administrative processes by:

- Improving the effectiveness and efficiency of approval processes for development
- Encouraging participation and engagement with stakeholders

	Initiatives	Aims	Timeframe	Progress
13.1	Microeconomic reform agenda	Boost productivity and economic growth.	Ongoing	COAG has referred the microeconomic reform agenda as it relates to housing supply and affordability to SCOTI. It is now included in the Cities Work Plan agreed by SCOTI in November 2012.
13.2	Local Government Reform Fund (DRALGAS)	Improve the asset and financial management capabilities of councils around Australia. Encourage greater collaboration between councils. Provide for nationally consistent data to enable the performance of councils to be measured.	2009–11	Under the Local Government Reform Fund, the Australian Government has provided \$17.5 million to local governments for 18 projects.
13.3	Ministerial council on infrastructure and transport to include planning ministers	Integrate infrastructure and planning reforms and actions.	2011–	The Standing Council on Transport and Infrastructure (SCOTI) (formerly known as the Australian Transport Council) was established in September 2011 and brings together Commonwealth, state, and territory (and New Zealand) ministers with responsibility for transport, planning and infrastructure issues, as well as the Australian Local Government Association.
13.4	Urban Policy Forum established to advise on National Urban Policy implementation (DIT)	To maintain constructive engagement with stakeholders that are not formally linked into COAG, including representatives from business and the community.	2011–12	The Urban Policy Forum was launched by the Hon Anthony Albanese MP, Minister for Infrastructure and Transport, on 20 Jan 2012, and meets twice yearly with sub-committees established as needed.
13.5	Continue to provide funding to local government, including for community infrastructure (DRALGAS)	Provide incentives and resources to local government for infrastructure that aligns with the aims of the National Urban Policy.	2011–14	Rounds 1 and 2 of the Regional Development Australia Fund are delivering capital infrastructure projects identified as priorities by local communities across Australia.  Local governments were eligible to apply to the Liveable Cities Program and partnerships between local and State Governments were encouraged.

Continued

	Initiatives	Aims	Timeframe	Progress
13.7	Support local government to undertake reforms to streamline administration and development approvals, and implement strategic spatial planning, in accordance with the National Urban Policy goals and objectives (DIT)	Support the creation of robust local government with adequate capabilities in the areas of financial management and strategic and spatial planning to enable them to make strong contributions to the objectives of the National Urban Policy.	2011–14	The Australian Local Government Association is a member of the Transport and Infrastructure Senior Officials Committee (TISOC) Cities Group, established by the Transport and Infrastructure Senior Officials Committee (TISOC) to progress the COAG cities agenda through the Standing Council on Transport and Infrastructure (SCOTI).  Local governments also have a number of representatives on the Urban Policy Forum.
13.8	Monitor progress towards implementation of the National Urban Policy goals and objectives, and report on actions and outcomes (DIT)	Deliver on National Urban Policy goals and objectives through an effective package of actions.	2011–17	This appendix of the <i>State of Australian Cities 2012</i> report illustrates how the Australian Government is aligning its cities-related policies and programs with the National Urban Policy.

## 14. Evaluate progress against performance by:

- Reporting, analysis and research

	Initiatives	Aims	Timeframe	Progress
14.1	Build on <i>State of Australian Cities 2010</i> by publishing annual updates to track progress in achieving objectives (DIT)	Provide information on cities to guide community discussion and policy development and allow users to measure the effectiveness of the National Urban Policy and associated actions.	2011–	The second State of Australian Cities report was released in October 2011 and this 2012 report is released in December 2012.  The 2010 and 2011 reports have been collectively downloaded just under two million times.
14.2	Include research on urban systems, environments and communities in the National Research Priorities (NRPs) (DIISRTE)	Recognise and support urban research as a national research priority.	2011–	The Cooperative Research Centre (CRC) for Water Sensitive Cities and the CRC for Low Carbon Living were announced in November 2011.  The CRC for Water Sensitive Cities was granted \$30 million and will deliver the socio-technical urban water management solutions, education and training programs, and industry engagement required to make Australian towns and cities water sensitive.  The CRC for Low Carbon Living secured \$28 million in funding and will to provide government and industry with social, technological and policy tools to overcome identified market barriers preventing adoption of cost effective low carbon products and services, while maintaining industry competitiveness and improving quality of life.
14.3	Produce spatial reports on land use and infrastructure (DIT)	Improve understanding of the economic and social dynamics of cities to underpin evidence-informed urban policy.	2011–13	See 1.9
14.4	\$10.1 million for a new <i>Measuring Sustainability Program</i> to establish a National Sustainability Council and a set of Sustainability Indicators to highlight key trends and emerging sustainability issues for policy and decision makers and communities (SEWPaC)	Better information to inform policy and decision-making.	2011–	National Sustainability Council was established and sustainability indicators announced in October 2012. The National Sustainability Council will report against the sustainability indicators every two years.







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